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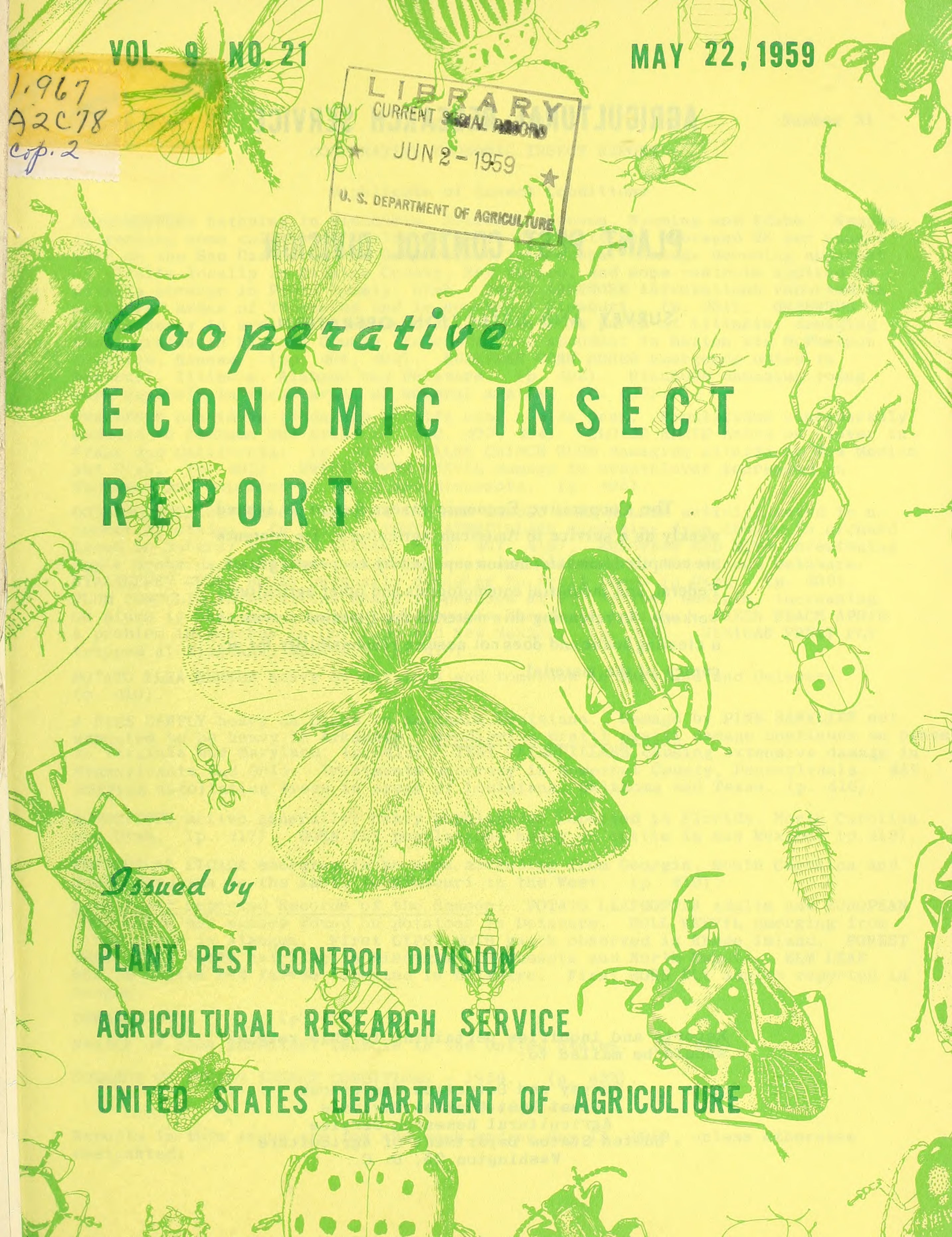

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U. S. DEPARTMENT OF AGRICULTURE

Cooperative
ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Survey and Detection Operations
Plant Pest Control Division
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Volume 9 May 22, 1959 Number 21

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

GRASSHOPPERS hatching in Wisconsin, Nebraska, Kansas, Wyoming and Idaho. Nymphs increasing some cultivated fields in Maricopa County and averaged 26 per square yard on the San Carlos Indian Reservation in Arizona. Damage becoming apparent in alfalfa locally in Hidalgo County, New Mexico, and some controls applied to alfalfa acreage in Piute County, Utah. Heavy ARMYWORM infestations reported in scattered areas of Tennessee and in southeast Missouri. (p. 401). GREENBUG damage heavy in areas of Missouri, killing oats in parts of Illinois, damaging small grains in Lincoln County, Nebraska, and abundant in Marion and McPherson Counties, Kansas. (pp. 401, 402). EUROPEAN CORN BORER emergence noted in Missouri, Illinois, Alabama and Delaware. (p. 402). BILLBUGS damaging young corn severely in local areas of several states. (p. 403).

PEA APHID continues to damage alfalfa over a wide area. Populations considerably reduced in Alabama and Arizona. (pp. 403, 404). CLOVER APHID heavy on clover in Idaho and California. (p. 404). FALSE CHINCH BUGS damaging alfalfa in New Mexico and Utah. (p. 405). SWEETCLOVER WEEVIL damage to sweetclover increased in Nebraska and reported in Idaho and Minnesota. (p. 406).

CODLING MOTH emergence reported and RED-BANDED LEAF ROLLER activity noted in a number of states. (p. 407). TENT CATERPILLARS migrating from cherry to orchard trees in several Eastern States. (pp. 407, 416). EUROPEAN RED MITE threatening apple orchards in Orleans, Indiana, area and building up throughout Delaware. STRAWBERRY CROWN BORER unusually damaging to fruit trees in Utah. (p. 408). PLUM CURCULIO infestations heavy in peaches at Ft. Valley, Georgia, increasing on plums in Ohio and causing considerable damage in Indiana. GREEN PEACH APHID a problem in peaches in Colorado and New Mexico. (p. 409). MEXICAN FRUIT FLY trapped at Tiajuana, Mexico. (p. 410).

POTATO FLEA BEETLE heavy on potatoes and tomatoes in Maryland and Delaware. (p. 410).

A PINE SAWFLY heavy on pines in northern Louisiana. Damage by PINE SAWFLIES not expected to be heavy in Arkansas. Neodiprion pratti pratti damage continues on pines in Virginia and Maryland. (p. 415). TENT CATERPILLARS causing extensive damage in Pennsylvania and Ohio. Treatments underway in Somerset County, Pennsylvania. MAY BEETLES defoliating trees in areas of Louisiana, Oklahoma and Texas. (p. 416).

MOSQUITOES active generally, heavy populations reported in Florida, North Carolina and Utah. (p. 417). HORN FLY populations heavy on cattle in New Mexico. (p.418).

PERIODICAL CICADA emerging in an area extending from Georgia, South Carolina and North Carolina in the East, to Missouri in the West. (p. 419).

Some First Reported Records of the Season: POTATO LEAFHOPPER adults and EUROPEAN CORN BORER egg masses found on potatoes in Delaware. BOLL WEEVIL emerging from hibernation in Alabama. First GYPSY MOTH hatch observed in Rhode Island. FOREST TENT CATERPILLAR hatching in Wisconsin, Minnesota and North Dakota. ELM LEAF BEETLE adults and larvae reported in Delaware. First HORN FLY adults reported in Oregon.

CORRECTIONS. (p. 419).

Status of some IMPORTANT INSECTS in the United States. (p. 445).

SUMMARY OF FOREST INSECT CONDITIONS - 1958. (p. 422).

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Reports in this issue are for the week ending May 15, 1959, unless otherwise designated.

WEATHER BUREAU 30-DAY OUTLOOK

MID-MAY TO MID-JUNE 1959

The Weather Bureau's 30-day outlook for the period mid-May to mid-June calls for temperatures to average below seasonal normals over the eastern half of the Nation and also in the Central Plains region. Greatest departures are indicated over the eastern Great Lakes and Ohio Valley areas. Above normal averages are predicated for the northwest quarter of the country and along the coast of California. In unspecified areas near normal temperatures are in prospect. Precipitation is expected to exceed normal in a broad belt extending from the Central and Southern Plains northeastward to the Great Lakes. Subnormal rainfall is predicted for the Northern Plains, the far Southwest, and the east Gulf States. Otherwise near normal amounts of rainfall are indicated.

Weather forecast given here is based on the official 30-day "Resume and Outlook," published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 a half year.

WEATHER OF THE WEEK ENDING MAY 18

Temperatures averaged above normal from the far Southwest to the central Rockies and southwestern Great Plains, along the immediate Gulf coast to Florida and in the coastal sections of the Middle Atlantic and New England States. Below-normal values prevailed generally over the northern tier of states, and from the eastern Great Plains and Great Lakes into the Southeast. A large and vigorous low pressure area moved across southern Canada during the week, drawing cold air southward over all the country except extreme southern Florida and the Southwest by the weekend. Very strong winds accompaning the cold air whipped up dust over Minnesota and the Dakotas. East of the Great Plains, temperatures ahead of the advancing cold air rose into the 80's as far north as New York and New England where Boston, Massachusetts, recorded a new high of 85° for the 12th. Temperatures dropped sharply in the cold air with scattered freezing as far south as northern Missouri, Ohio, central Pennsylvania and the southern Appalachians during the latter half of the week. The mercury dropped to 22° at Klingman's Peak, North Carolina, into the teens in the Dakotas, the middle to high 20's in Iowa and Ohio on the morning of the 15th and the middle 20's in western New York and northern New England over the weekend. In northern areas west of the Rockies temperatures averaged near normal, being generally abnormally cool at the beginning and end of the week, and unseasonably warm on the 12th and 13th when maxima reached the 80's and 90's as far north as Washington and Idaho. Very warm temperatures were recorded in the southern Rockies, the Great Basin and Southwest, with readings topping 100° in the desert areas and 90° in most other sections.

General rains early in the week in the Ohio and middle Mississippi Valleys replenished needed topsoil moisture in southern Illinois and Indiana, Kentucky and Tennessee. Heavy showers and thunderstorms left substantial to locally excessive rainfall along the immediate Gulf coast and over the South Atlantic States. Apalachicola, Florida, reported over 7 inches at midweek. Almost daily precipitation totaled from 1/2 to 1 inch over much of the Northeast. Only light amounts, however, were recorded in areas of northern New England, the upper Great Lakes and the northern Great Plains. Light snow fell in Minnesota and Wisconsin at midweek. On the 16th, 17th and 18th severe squall lines and thunderstorms developed over the central Great Plains. Damaging winds, several tornadoes and hail accompanied heavy precipitation from Oklahoma northward through Kansas and Missouri to Iowa. Rains of 4 to 5 inches and some hail were reported locally in Iowa, Kansas and nearby states. Pleasant Hill, Kansas, recorded a 4.74-inch

(Weather continued on page 421.)

CEREAL AND FORAGE INSECTS

GRASSHOPPERS - ILLINOIS - Hatching in southeast, nymphs very abundant in fence rows and margins of alfalfa fields. (Ill. Ins. Rpt.). WISCONSIN - Nymphs observed in light soil areas in central counties; in alfalfa field margins primarily. (Wis. Coop. Sur.). MINNESOTA - Eggs in northwest district range in development from clear to eye-spot condition. Many *Melanoplus femur-rubrum* show more development than normally. (Minn. Ins. Rpt.). NEBRASKA - First-instar nymphs of *Ageneotettix deorum*, *Melanoplus bilituratus* and *M. bivittatus* present in southeast, less than one per square yard. In western area, *M. bilituratus* eggs in full segmentation stage and economic hatch possible in short time if temperatures are favorable. *M. differentialis* will not show economic hatch for several weeks. *M. femur-rubrum* and *Aeoloplides turnbulli* not observed. Of range species observed, *A. deorum* most advanced, *Aulocara elliotti* in full segmentation with no hatch apparent. (Roselle, Bell, Fitchett). KANSAS - *M. bilituratus* hatching in grassland areas of Riley County and first and second-instar nymphs collected in northeast and east central areas. (Arnett, Peters). OKLAHOMA - Nymphal populations 4-8 per square yard in widely scattered areas in northwestern and panhandle counties. Hatch well underway, but not complete. All nymphs first to third instar. Dominant species along roadsides and field margins were *M. bivittatus* and *M. differentialis*. Dominant rangeland species were *A. elliotti*, *A. deorum*, *Drepanoptera femoratum*, *Phlibostroma quadrimaculatum* and *Amphitornus coloradus*. (Pela, Owens). Very light elsewhere in State. (PPC). ARIZONA - First and third-instar *M. differentialis* increasing, averaging as high as 10 per square yard some cultivated fields in Maricopa County. Some adults of *M. cuneatus*, *M. bilituratus* and *A. elliotti* appearing on San Carlos Indian Reservation in Graham and Gila Counties. Populations average 26 per square yard. (Ariz. Coop. Sur.). NEW MEXICO - Nymphs becoming very numerous along fence rows and ditch banks in Gila-Cliff area, Hidalgo County. Averaged as high as 5-6 per sweep in alfalfa fields. Damage becoming apparent. Alfalfa fields in Tularosa area averaged about 25 nymphs per 100 sweeps. (N. M. Coop. Rpt.). WYOMING - *Melanoplus confusus* hatching in rangeland south of Glendo. No damage observed. (Pfadt). IDAHO - *M. bilituratus* second-instar nymphs slightly under 1 per square yard in Riggins area. (Evans). UTAH - Hatching occurring in Washington, Iron, Millard, Kane, Piute and Sevier Counties. First to third instars present. Controls applied to 150 acres of alfalfa and 200 additional acres will need controls in Piute County. Becoming threatening locally in Iron County. *Trimerotropis* spp. adults scarce in Washington and Iron Counties compared with outbreak same time in 1958. No hatching observed in Boulder area of Garfield Co., where outbreak was severe in 1958. (Knowlton). SOUTH DAKOTA - About 90 percent of *M. differentialis* egg pods in north central area in eye-spot stage while *M. femur-rubrum* eggs averaged about 90 percent in coagulated stage. (Mast).

ARMYWORM (*Pseudaletia unipuncta*) - TENNESSEE - Heavy, scattered infestations requiring control in pastures and small grains in western area. (Mullett). ILLINOIS - Damaging wheat and barley in extreme southern tip of State, scattered and light north of Peoria. (Ill. Ins. Rpt.). MISSOURI - Heavy in barley and wheat with some head clipping in barley in southeast. Small larvae in fescue and dense wheat in central area. (Kyd, Thomas, Munson). OKLAHOMA - Light in 2 wheat fields in Grandfield area (Hatfield), occasional larvae found in barley in central and north central counties (Henderson) and none noted in central and east central counties. (Wood). DELAWARE - First larvae of season reported. (Burbutis, Conrad).

GREENBUG (*Toxoptera graminum*) - ILLINOIS - Counts 70-750 per 100 sweeps on oats and 10-1,000 on wheat in southeast. In southwest and central areas, spots in oat fields being killed or severely retarded. (Ill. Ins. Rpt.). MISSOURI - Damage to late-planted oats heavy in northeast and north central areas, counts 100-5,000 per linear foot. Counts in barley 50-1,000 and in wheat 40-800 per linear foot, heavier in late wheat. (Kyd, Munson, Thomas). NEBRASKA - Light on small grains in east central area. No damage to wheat. Moderate to heavy and causing damage to spring-seeded grains in Lincoln County. (Roselle, Pruess). KANSAS - Abundant in barley in Marion and McPherson Counties, lighter in Reno County. (Painter). Counts less than 10 to about 150 per foot of row in northeast and east central counties. (Peters). OKLAHOMA - Light in east central and northeastern areas (VanCleave,Campbell) and none found in central, north central and east central counties (Henderson, Wood). IOWA - Damaging oats in field south of Fairfield. (Iowa Ins. Inf.).

ENGLISH GRAIN APHID (Macrosiphum granarium) - LOUISIANA - Light to moderate in oats in northern area. (Spink). ILLINOIS - Counts 10-700 per 100 sweeps in wheat and 60-28,000 in oats in southeast; abundant other areas. (Ill. Ins. Rpt.). OKLAHOMA - Light in isolated small grain fields in northeastern area (VanCleave, Campbell) and none noted in central, north central and east central counties (Wood, Henderson).

CORN LEAF APHID (Rhopalosiphum maidis) - KANSAS - Found in barley fields in Marion, McPherson, Reno and Stafford Counties. (Painter). OKLAHOMA - Light in Johnson grass in Payne, Noble, Pawnee, Creek and Tulsa Counties (Wood) and present along roadsides in central and north central areas (Henderson). UTAH - Predators reducing populations many barley and wheat fields in St. George-La Verkin area. (Knowlton). NEW MEXICO - Present most barley fields in Luna, Dona Ana and Sierra Counties. Heavy, causing considerable damage in southern Dona Ana County. (N.M. Coop. Rpt.).

RICE STINK BUG (Oebalus pugnax) - LOUISIANA - Ranged 20-200 per 100 sweeps in oats in northern area. (Spink).

A RICE DELPHACID (Sogata orizicola) - TEXAS - Surveys for this vector of hoja blanca in rice fields in Ft. Bend, Wharton, Matagorda and Brazoria Counties were negative. (Cason, Hawkins).

WIREWORMS - OREGON - Damaging spring barley and other grains in Willamette Valley. Damage to grain unusual in this section of State. (Morrison, Dickason). IDAHO - Adults common in Latah and Nez Perce Counties. (Portman et al.). MONTANA - Reported in small grain area in Hill County. Treated seed being used for planting. (Roemhild). ALABAMA - Damaging corn in Monroe and Conecuh Counties. (Lemons).

EUROPEAN CORN BORER (Pyrausta nubilalis) - MISSOURI - Emergence observed in southeast, no pupation noted in northeast. (Kyd, Thomas, Munson). IOWA - Pupation 4 percent in central area compared with 32 percent in 1958 and 2 percent in 1957. (Iowa Ins. Inf.). ILLINOIS - Pupation 70 percent, emergence 4 percent in southern area; 15-35 percent pupation and no emergence in south central area; pupation 10-20 percent and no emergence in central and north central areas; and no pupation in northern area. (Ill. Ins. Rpt.). INDIANA - Winter mortality 43 percent in Posey County, 22 percent in Shelby County. Pupation 25 percent in Posey County May 12. No pupation observed in Shelby County May 13. Parasitism of larvae by Lydella grisescens averaged 14 percent in Shelby County. (Everly). OHIO - Pupation not begun by May 14 at Columbus or Wooster. (Triplehorn). ALABAMA - Emergence 10 percent on Sand Mountain and in the Tennessee Valley. Few egg masses being deposited on older corn. (Eden). DELAWARE - Adults present throughout most of State. (Burbutis, Conrad).

CORN EARWORM (Heliothis zea) - GEORGIA - Light to moderate in corn whorls in Clinch, Ware, Pierce, Tattnall, Evans and Bulloch Counties. (Johnson). LOUISIANA - Light on corn in Acadia and St. Landry Parishes. Heavy in clover in Acadia Parish, 45-380 per 100 sweeps in northern area. Heavy on soybeans in St. Landry Parish. (Spink). ARIZONA - Infesting newly appearing corn silks in Yuma County. (Ariz. Coop. Sur.).

SOUTHERN CORNSTALK BORER (Diatraea crambidoides) - GEORGIA - Moderate on corn in Clinch County. (Johnson).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - OKLAHOMA - Pupation 26 percent near Perkins on May 11, 42 percent near Yale on May 13. (Arbuthnot). ARIZONA - Larvae light in Maricopa County corn. (Ariz. Coop. Sur.).

BILLBUGS - OKLAHOMA - Heavy populations destroyed approximately 130 acres of young corn in Mayes County. When one 90-acre field was replanted, second stand also destroyed. (Hellwege). GEORGIA - Calendra callosa damage to corn continues in several southern counties. Some farmers have planted 3 times. (Johnson). NORTH CAROLINA - Damaging corn fields in Duplin, Harnett and Columbus Counties. Complete loss reported in Duplin County. (Farrier, Jones, Scott). ALABAMA - Calendra maidis heavy and damaging corn in Crenshaw and De Kalb Counties. (Ruffin, Hays).

CORN FLEA BEETLE (Chaetocnema pulicaria) - ILLINOIS - Adults 0-2 per sweet corn stalk in East St. Louis area. (Ill. Ins. Rpt.). OKLAHOMA - Populations 0-3 per corn plant in east central and northeastern areas (VanCleave, Campbell), 6 per plant in Hugo area (Goin, Vinson), none found in central and east central counties (Wood) and averaged 1-5 per plant in Payne County (Henderson). DELAWARE - Present on young corn in Sussex County, no injury apparent. (Burbutis, Conrad).

FLEA BEETLES - NORTH CAROLINA - Light infestations in corn in Duplin, Pender, Bladen and Columbus Counties. (Scott).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - ALABAMA - Damage to corn continues in southern area, replanting required some instances. (Lemons).

CHINCH BUG (Blissus leucopterus) - OKLAHOMA - Adults averaged 0-2 per plant in corn fields in east central and northeast areas (VanCleave, Campbell) and 1-7 per linear foot in Creek, Tulsa, McIntosh, Okfuskee, Hughes, Muskogee and Wagoner Counties (Robinson). Counts ranged 0-5 per linear foot in central and east central counties. (Wood). Few found in central and north central counties. (Henderson). TEXAS - Damage to young corn and grain sorghum widespread in Kaufman and surrounding counties. (Randolph).

A CHINCH BUG (Blissus leucopterus insularis) - FLORIDA - Activity in Broward County at high level. Heaviest observed in 5 years. In 7 minutes, 251 counted in square foot, bugs still appearing at rapid rate in flotation can. (Kerr, May 6).

A GRASS SAWFLY - DELAWARE - Light, general infestations on grass in areas of New Castle County. (Burbutis, Conrad).

BRONZED CUTWORM (Nephelodes emmedonia) - PENNSYLVANIA - Severe and general in Greene County on bluegrass pastures. (Udine).

WEBWORMS (Crambus spp.) - WASHINGTON - Damaging lawns several areas around Puyallup, Pierce County. (Howitt).

PEA APHID (Macrosiphum pisi) - IDAHO - General in alfalfa fields in Latah and Nez Perce Counties. (Portman et al.). Range 10-20 per sweep west of Myrtle, Nez Perce County; none found in Benewah County. (Foote). Heavy in Twin Falls area, extensive damage occurring. Predators and parasites building up. (Gibson). Range 20-10,000 per sweep in untreated alfalfa in western and southern Canyon County. From 30 to 50 percent of fields have been treated once. Predators greatly reduced in treated fields. (Waters). WASHINGTON - Averaged 37 per 100 alfalfa tips on 12,000 acres near Walla Walla. This is lower than average. Few have entered pea fields. (Cook). WYOMING - Appearing in northwestern alfalfa fields. Heaviest infestation, 200-300 per 100 sweeps, in Thermopolis area. (Davison). UTAH - Generally low to occasionally threatening over western part of State. (Knowlton). ARIZONA - Greatly reduced in central area alfalfa fields (Ariz. Coop. Sur.). NEW MEXICO - Light to moderate most areas. (N.M. Coop.Rpt.).

TEXAS - Range 500-2,000 per sweep on vetch in Kaufman County. (Randolph). COLORADO - Counts 35-50 per 10 sweeps in alfalfa in Larimer County, 20-80 per 100 sweeps in Mesa County and 10-20 per 100 sweeps in Montrose County. (Exp. Sta., Colo. Ins. Det. Comm.). OKLAHOMA - Light in alfalfa along Arkansas River in east central area (VanCleave), 0-10 per sweep in east central counties (Robinson), 6-50 per sweep in Choctaw County (Goin, Vinson) and 0-0.6 per sweep in Caddo County (Hudson). KANSAS - Abundant and damaging alfalfa in Marion, McPherson, Reno and Stafford Counties. (Painter). Counts 25-200 per sweep in alfalfa and red clover in northeast and east central counties. (Peters). NEBRASKA - Averaged 120 per 10 sweeps in alfalfa and 8 in sweetclover in southeast. Increasing in alfalfa, no damage evident. (Roselle). IOWA - Extremely heavy in alfalfa in sandy areas of Black Hawk and Bremer Counties. (Iowa Ins. Inf.). MISSOURI - Heavy on vetch and alfalfa in southeast. Counts 6-10 per sweep on alfalfa in northern area. (Kyd,Thomas, Munson). WISCONSIN - Populations quite variable in alfalfa. (Wis. Coop. Sur.). ILLINOIS - Counts per 100 sweeps 30-5,000 in south and southwest, 200-10,000 in southwest and central and 50-200 in northern area. Predators and parasites still abundant. (Ill. Ins. Rpt.). VIRGINIA - Light to medium in alfalfa in Bland, Tazewell, Russell, Scott, Loudoun and Carroll Counties. (Morris, Brown, Price). MARYLAND - Averaged 5-10 per sweep on unsprayed alfalfa in eastern Allegany County. (U. Md., Ent. Dept.). LOUISIANA - Light to moderate in oats in northern area. (Spink). ALABAMA - Decreased considerably most sections of State. (Grimes).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Averaged 0.08 per trifoliate leaf in Maricopa County, a considerable reduction from April average of 0.57. (Ariz. Coop. Sur.). NEW MEXICO - Building up many alfalfa fields in Otero, Grant and Dona Ana Counties. Many growers cutting early rather than applying controls. (N. M. Coop. Rpt.). OKLAHOMA - Light in alfalfa fields along Arkansas River in east central area (VanCleave), 0-10 per sweep in east central counties (Robinson), 8-75 per sweep in Choctaw County (Goin, Vinson), 30-70 per square foot of crown area in Tillman County (Hatfield), 1-10 per sweep in Caddo County (Hudson) and 3 per square foot of crown area in Cimmaron County (Owen). UTAH - Populations low in Washington County, present in Iron County. (Knowlton). OREGON - None found during week of May 4-9 in fields known to have been infested in Gilliam, Morrow and Umatilla Counties. (Goeden). IDAHO - None found south of Lewiston in field heavily populated in 1958. (Portman et al.). None found in alfalfa east of Lewiston and in Latah County. (Foote).

CLOVER APHID (Anuraphis bakeri) - CALIFORNIA - Heavy on clover in Seeley area, Imperial County. (Cal. Coop. Rpt.). IDAHO - Counts 100-5,000 per red clover plant in southwest. Populations much higher than usual for time of year. Plant growth reduced considerably. (Waters).

SWEETCLOVER APHID (Myzocallidium riehmi) - NEBRASKA - Increasing on sweetclover, counts 16 per 10 sweeps in southeast. (Roselle).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - MASSACHUSETTS - First-instar nymphs collected in North Amherst, April 22. (Wheeler). MARYLAND - Light to moderate on alfalfa and clover in eastern Allegany County. (U. Md., Ent.Dept.). VIRGINIA - Heavy in alfalfa and clover fields in Bland, Tazewell, Russell and Scott Counties. Adults appearing in fields. (Morris). Medium in Carroll County, light in Loudoun County and severe on clover some Nelson County fields. (Price, Brown, Swain). ILLINOIS - Nymphs 75-200 per 100 stems in first-year hay fields in northern area. Population 50 percent decreased over previous week. Range 0-90 nymphs per 100 stems and 0-30 adults per 100 sweeps in southeast. (Ill. Ins. Rpt.). MICHIGAN - Nymphs observed May 5 at Centerville and May 10 at East Lansing. (Hutson). IDAHO - Few spittle masses, probably this species, found on roadside sweetclover west of Myrtle in Nez Perce County. (Foote). CALIFORNIA - Heavy in grasses in Richardson Grove area, Humboldt County. (Cal. Coop. Rpt.).

TARNISHED PLANT BUG (Lygus lineolaris) - ILLINOIS - Adults 0-60 per 100 sweeps in southeast. (Ill. Ins. Rpt.). WISCONSIN - In alfalfa most sections. (Wis.Coop. Sur.). MICHIGAN - Adults extremely numerous on vetch around East Lansing.(Hutson).

NEBRASKA - Averaged 10 per 10 sweeps in alfalfa in eastern area, buildup slow. (Roselle). KANSAS - Counts as high as 5 per sweep in northeast and east central counties. (Peters). ALABAMA - Numerous on maturing crimson clover in northern area and moderate activity on oats and clover in central area. (Eden, Grimes). LOUISIANA - Ranged 20-50 per 100 sweeps in oats in northern area. (Spink).

LYGUS BUGS (*Lygus* spp.) - OKLAHOMA - Common in alfalfa fields in east central area (VanCleave) and 0-4 per sweep in Choctaw County (Goin, Vinson). COLORADO - Range 1-3 per 10 sweeps in alfalfa in Larimer County (Exp. Sta.), 5-10 per 100 sweeps in Delta County, 5 in Mesa County and 15-20 in Montrose County (Colo. Ins. Det. Comm.). UTAH - Nymphs very numerous locally in alfalfa over State. (Knowlton). NEW MEXICO - Building up in alfalfa and small grains in southern counties. Averaged about 1 per sweep in Hidalgo and Grant Counties. (N. M. Coop. Rpt.).

PLANT BUGS - ILLINOIS - *Adelphocoris rapidus* 0-250 and *A. lineolatus* 0-20 per 100 sweeps in southeast. (Ill. Ins. Rpt.). DELAWARE - *A. rapidus* nymphs becoming common on legumes most areas of State. *Trigonotylus brevipes* common on grain in New Castle County and causing noticeable damage. (Burbutis, Conrad). MISSOURI - *Leptopterna dolabratus* nymphs 5-8 per sweep in bluegrass in northeast. (Kyd, Thomas, Munson).

FALSE CHINCH BUGS (*Nysius* spp.) - UTAH - More numerous than normal in alfalfa and other crops throughout Washington County and in Paragonah-Parwan area of Iron County. (Knowlton). NEW MEXICO - *N. raphanus* becoming very numerous in alfalfa fields in Virden Valley, Hidalgo County. (N. M. Coop. Rpt.).

POTATO LEAFHOPPER (*Empoasca fabae*) - ILLINOIS - Adults 0-60 per 100 sweeps in southeast, 100-200 in southwest, 100-260 in central and eastern and 3-30 in northern area. (Ill. Ins. Rpt.). NEBRASKA - Light most alfalfa fields in southeast. (Hill).

A CLOVER LEAFHOPPER (prob. *Aceratagallia sanguinolenta*) - MONTANA - Numerous locally in western area. (Roemhild).

ALFALFA WEEVIL (*Hypera postica*) - RHODE ISLAND - Very few larvae evident in alfalfa in South Kingstown. (Hansen). MARYLAND - Damage heavy on untreated alfalfa at Piney Grove, Allegany County. Control generally good from Allegany County eastward. (U. Md., Ent. Dept.). DELAWARE - Adults noticeably more common on alfalfa, especially in New Castle County. (Burbutis, Conrad). VIRGINIA - Light in Bland, Tazewell and Russell Counties (Morris) and medium in Clarke, Bath and Carroll Counties on alfalfa (Gerken, Brown, Price). SOUTH CAROLINA - Caused considerable damage in untreated alfalfa in York, Cherokee and Chester Counties. (Nettles et al.). GEORGIA - Larvae feeding on second-growth alfalfa in Putnam County. (Johnson). COLORADO - Larvae range 80-140 per 100 sweeps in untreated alfalfa in Mesa County, about 50 percent parasitized. (Colo. Ins. Det. Comm.). WYOMING - Average number of adults per 100 sweeps 15-20 in Worland-Basin area. 5 in Lovell area and 3-10 in Powell-Cody area. None found in Riverton, Thermopolis, Emblem and Torrington areas. (Davison). IDAHO - Adults and larvae present in fields near Lewiston. (Portman, Futter, Fenwick). NEVADA - Larvae averaged 30 per sweep in untreated fields, some pupation occurring in Fallon area, Churchill County. (York, May 8). Heavy and damaging untreated fields in Douglas County. (Roberts). Development very uneven in Fallon area, Churchill County. (Lauderdale). UTAH - Small larvae appearing in Salt Lake and Weber Counties. (Knowlton). MONTANA - Spraying practically completed. Larvae expected to hatch by May 22 in warmer areas. (Roemhild).

CLOVER LEAF WEEVIL (*Hypera punctata*) - Heavy in mixed vegetation in Martinez area of Contra Costa County. (Cal. Coop. Rpt.). IOWA - Heavy larval infestation in Page County. (Iowa Ins. Inf.).

CLOVER WEEVILS (Hypera spp.) - ILLINOIS - Newly emerged adults of H. nigrirostris 0-60 per 100 sweeps in southeastern area; H. meles 0-20 per 100 sweeps. Fifty to 100 percent of stems damaged by larvae of both species. Larval damage appearing in northern area. (Ill. Ins. Rpt.).

CLOVER ROOT CURCULIO (Sitona hispidula) -IDAHO - Adults 2-4 per sweep in alfalfa fields in Latah County and 1 per 10 sweeps in red clover north of Worley. (Portman, Foote, et al.).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - NEBRASKA - Averaged 2 per 10 sweeps in sweetclover in southeast. Damage to seedling sweetclover increased this year. (Roselle). IDAHO - Abundant on sweetclover in Latah and Nez Perce Counties, severe feeding damage occurring. (Portman et al.). MINNESOTA - Feeding injury on overwintering sweetclover apparent most districts. (Minn. Ins. Rpt.).

VETCH BRUCHID (Bruchus brachialis) - TEXAS - Continues heavy in vetch in Kaufman and surrounding counties, ranges 5-10 per sweep in untreated fields. (Randolph).

THRIPS - UTAH - Numerous on alfalfa and small grains in Washington County and above normal in Iron County. (Knowlton).

ARMY CUTWORM (Chorizagrotis auxiliaris) - COLORADO - Larvae, 0-4 per alfalfa crown, in Rio Grande and Costilla Counties. (Ext. Serv.).

VARIEGATED CUTWORM (Peridroma margaritosa) - ILLINOIS - Counts 0-20 per 100 sweeps on alfalfa and red clover in southeastern area, 0-60 in southwest. (Ill. Ins. Rpt.). MISSOURI - Heavy on alfalfa in southeast. Small larvae observed in northeast and north central areas, counts 0-4 per square foot in alfalfa. (Kyd, Thomas, Munson). KANSAS - Counts as high as 2-3 per 5 sweeps in alfalfa fields in Riley, Pottawatomie and Douglas Counties. (Peters). ARKANSAS - Scattered heavy local infestations in eastern area, up to 25-35 per square foot in white clover in Craighead County. (Ark. Ins. Rpt.).

GREEN CLOVERWORM (Plathypena scabra) - OKLAHOMA - Light in about 50 percent of alfalfa fields in Arkansas River bottom in east central area (VanCleave) and averaged 0.25 and 0.30 per sweep in alfalfa fields in Choctaw County (Goin, Vinson). DELAWARE - First larvae of season reported. (Burbutis, Conrad).

ALFALFA LOOPER (Autographa californica) - OREGON - Peak first flight April 26. Infestation appears to be over large area. (Hanna). WASHINGTON - Scarce to May 15 at Walla Walla. May be less serious than during past 2 or 3 years. (Cook).

CLOVER CATERPILLARS (Grapholitha spp.) - IDAHO - Adults of G. conversana increased over previous week in Latah and Nez Perce Counties. (Portman et al.). Adults swept from red clover fields north of Worley and south of Deary. (Foote). INDIANA - Larvae of G. interstinctana moderately abundant in red clover fields in Decatur County (Wilson) and adults common on roadside weeds in Benton County (McCoy).

A TORTRICID (Tortrix pallorana) - DELAWARE - Larvae abundant some fields of alfalfa and clover by April 20 in New Castle and Kent Counties. (Burbutis, Conrad).

TOBACCO THRIPS (Frankliniella fusca) - ALABAMA - Damage to peanuts continues to increase in southeast. (Grimes).

A STRIPED BLISTER BEETLE (Epicauta sp.) - GEORGIA - Heavy on soybeans and velvetbeans in Tattnall, Evans, Bulloch and Emanuel Counties. (Johnson).

FRUIT INSECTS

CODLING MOTH (Carpocapsa pomonella) - PENNSYLVANIA - First caged emergence May 7, continuing through May 13 in Adams County. (Asquith). OHIO - First adults of season emerged May 14 at Wooster. (Cutright). INDIANA - Heavy emergence of overwintering larvae continues at Vincennes. Forty percent emergence in cages. First-brood entries expected to start about May 15 and increase in numbers during week of May 17. (Hamilton). ILLINOIS - Emerged rapidly until rains slowed emergence for several days in Carbondale area. (Meyer). WISCONSIN - During week ending May 8, survey in Door County revealed 50 percent mortality of overwintering larvae under bands on apple tree trunks. (Wis. Coop. Sur.). MISSOURI - Larvae noted in untreated apples near Campbell May 8. They will probably appear around Cape Girardeau by May 15 and about 10 days later around Columbia. (Wkly. Rpt. Fr. Grs.). COLORADO - First of season taken in traps on May 6, in Mesa County. (Ext. Serv., Exp. Sta.). OREGON - First eggs of season found in Medford area May 13. (Gentner).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - MASSACHUSETTS - Egg masses abundant and hatching started. (Crop Pest Cont. Mess.). NEW YORK - Egg laying begun in several counties over the State. (N. Y. Wkly. Rpt.). NEW JERSEY - Some larvae on trunks of apple trees. (Ins. Dis. Newsl.) MARYLAND - Hatch about complete, larvae feeding on apple foliage at Hancock, Washington County. (U Md., Ent. Dept.). INDIANA - If not controlled, will cause considerable damage to some apple orchards in Orleans area. (Marshall). Hatched in Delaware, Elkhart, St. Joseph and La Porte Counties. Leaf damage and rolled leaves common. (Matthew). ILLINOIS - Larvae well protected in webs and rolled leaves in Carbondale area. Control will be difficult. (Meyer). MICHIGAN - On May 2, eggs still being laid and beginning to hatch at Niles, Stevensville and Baroda. (Hutson). WISCONSIN - Laying eggs during first week of May in Door County. (Wis. Coop.Sur.). MISSOURI - Light in northwest area. Some orchards around Columbia and Kansas City have nearly full frown larvae rolled up in leaves. Some difficulty reported from southeastern young untreated peach trees. (Wkly. Rpt. Fr. Grs.).

OBLIQUE-BANDED LEAF ROLLER (Archips rosaceana) - MICHIGAN - Feeding at Paw Paw, Coloma and South Haven. (Hutson).

CANKERWORMS - MISSOURI - Considerable damage to fruit trees in northwest area. (Wkly. Rpt. Fr. Grs.).

EYE-SPOTTED BUD MOTH (Spilonota ocellana) - WISCONSIN - Larvae going into cherry and apple buds May 4 in Door County. Plentiful in Calumet County orchards. (Wis. Coop. Sur.).

TENT CATERPILLARS (Malacosoma spp.) - NEW YORK - Nests evident some neglected orchards and occasionally in treated orchards in Niagara County. (N. Y. Wkly. Rpt.). OHIO - M. americanum nests numerous on untreated apple trees. (Cutright). PENNSYLVANIA - M. americanum migrating to other trees in southwest apple area. (Udine). OREGON - M. disstria light and scattered in Willamette Valley. (Stevenson).

UNSPOTTED TENTIFORM LEAF MINER (Callisto geminatella) - ILLINOIS - Moderate in several blocks of apple trees and on young unsprayed apple trees in Carbondale area. (Meyer).

ROSY APPLE APHID (Anuraphis roseus) - NEW YORK - Reproducing in large numbers and heavy on some neglected trees in Rockland County. Light in Ulster County. (N. Y. Wkly. Rpt.). INDIANA - Remain low in Orleans area. (Marshall). MICHIGAN - Hatch about complete in fruit growing districts as far north as Manistee. Hatch continuing further north. (Hutson). UTAH - Many apple leaves curled at Kanab, Mt.Carmel and Levan. Still numerous many instances. (Knowlton).

APPLE APHID (Aphis pomi) - INDIANA - Continue to increase on water sprouts in Orleans area. (Marshall). UTAH - Many apple leaves curled at Kanab, Mt. Carmel and Levan. Still numerous many instances. (Knowlton).

APHIDS - WISCONSIN - Aphids plentiful in Calumet County orchards. (Wis. Coop. Rpt.). OREGON - Heavy on prunes in Willamette Valley. (Stevenson).

EUROPEAN RED MITE (Panonychus ulmi) - MASSACHUSETTS - Adults appeared, first-generation eggs can be expected before petal-fall. (Crop Pest Cont. Mess.). NEW YORK - Laid eggs in untreated apple trees in Westchester County, hatched nymphs found May 7 in Clinton County and May 8 in Niagara County. (N. Y. Wkly. Rpt.). INDIANA - Threatening in Orleans area (Marshall) and vary extensively in Vincennes area due to effectiveness of control. (Hamilton). WISCONSIN - Hatching May 4 in Door County. (Wis. Coop. Sur.). MICHIGAN - Hatched at Spinks Corners, Benton Harbor, Allegan and East Lansing April 27. (Hutson). ILLINOIS - Second-generation hatch well under way in Carbondale area. (Meyer). MARYLAND - Spotty on apple in Washington County. (U. Md., Ent. Dept.). DELAWARE - Building up on apples throughout State. (Burbutis, Conrad).

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) - INDIANA - Very light on apple in Vincennes area May 11. Egg laying started. (Hamilton). OHIO - Few migrated from ground to lower limbs of peach trees, most remain on ground under leaves of dock, mustard and dandelion. (Rings).

A BRYOBIA MITE (Bryobia rubrioculus) - NEW MEXICO - Adults and larvae damaging foliage of apple in Cliff-Gila area and along Mimbres River in Grant County. (N. M. Coop. Rpt.). UTAH - Marking foliage in orchards in Washington County and numerous in some Salt Lake County orchards. Apricot foliage moderately infested. (Knowlton).

PEAR LEAF BLISTER MITE (Eriophyes pyri) - UTAH - Conspicuous on apple foliage and heavier on pear foliage at Levan. (Knowlton).

CHERRY CASEBEARER (Coleophora pruniella) - WISCONSIN - Moving out to tips on cherry and apple trees in Door County May 4. (Wis. Coop. Sur.).

FRUIT TREE LEAF ROLLER (Archips argyrospila) - CALIFORNIA - Medium on cherry trees in El Dorado area, El Dorado County. (Cal. Coop. Rpt.).

STRAWBERRY CROWN MOTH (Ramosia bibionipennis) - UTAH - Unusually damaging to peach and apricot in Cache, Weber and Box Elder Counties (Davis) and in Tooele County (Knowlton).

PEAR PSYLLA (Psylla pyricola) - NEW YORK - Egg laying moderate in Westchester County and hatching in Orleans County. Nymphs observed May 5 in Wayne County and May 6 in Niagara County. (N. Y. Wkly. Rpt.). MICHIGAN - Had not hatched as of May 2 at Fennville and South Haven. (Hutson). OREGON - First adults of season noted in Hood River Valley May 7-11. (Ellertson). First-brood adults oviposited on pear foliage in Medford area May 11. (Gentner).

BLACK CHERRY APHID (Myzus cerasi) - MICHIGAN - Beginning to hatch on May 2 at South Haven, Fennville and Grand Rapids. (Hutson).

CATFACING INSECTS - SOUTH CAROLINA - Damage noted in York County. (Nettles et al.). INDIANA - Catfacing by stink bugs, week of May 11, in Vincennes area. (Hamilton). Stink bugs continue to feed on young peaches causing distortion in Orleans area. (Marshall). ILLINOIS - Stink bugs continue to enter peach orchards in Carbondale area. (Meyer).

PEACH TREE BORER (Sanninoidea exitiosa) - MISSOURI - Some orchards in Campbell area heavily infested. (Wkly. Rpt. Fr. Grs.).

LESSER PEACH TREE BORER (Synanthedon pictipes) - LOUISIANA - Heavy in Lincoln Parish with emergence of adults more than three-fourths complete. (Spink). MISSOURI - Some orchards in Campbell area heavily infested. (Wkly. Rpt. Fr. Grs.).

PEACH TWIG BORER (Anarsia lineatella) - WASHINGTON - General, moderate damage on stone fruits. (Anthon).

PLUM CURCULIO (Conotrachelus nenuphar) - NEW YORK - Eight adults shaken from one cherry branch May 5, in Orange County. (N. Y. Wkly. Rpt.). MARYLAND - Adults emerging and depositing eggs on peach and plum at Hancock, Washington County. (U. Md., Ent. Dept.). GEORGIA - Peach drop caused by this pest is over. Total of 3,479 larvae emerged from a bushel of peach drops picked up in an orchard at Ft. Valley. This is a 58 percent infestation, and excepting last year, is the heaviest since 1947. (Snapp). FLORIDA - Attacking plums more severely this spring than previously in the Ocala district. (Fla. St. Plt. Brd., Apr. Rpt.). OHIO - Increasing on plums in northern area. First oviposition observed in Columbus May 9 and Wooster May 14. (Rings). MICHIGAN - First of season found at Baroda May 2. (Hutson). INDIANA - Abundant and active in peaches and cutting apples in many orchards surrounded by woods or peaches in Orleans area. (Marshall). Still active in Vincennes area. In an abandoned orchard, 355 adults were jarred from 5 trees. (Hamilton). Considerable damage to newly set fruit in Delaware County and also active in Elkhart, St. Joseph and La Porte Counties. (Matthew). ILLINOIS - Still active but have passed peak of activity in Carbondale area. (Meyer). MISSOURI - Light in central and northwest area but heavy in several orchards near Campbell and south of Cape Girardeau. (Wkly. Rpt. Fr. Grs.).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - INDIANA - First larvae emerged in Orleans area. Entering peach twigs. (Marshall). Adults from overwintering brood continued coming to bait traps, especially heavy May 3-4 in Vincennes area. (Hamilton). ILLINOIS - Light damage continues to peach trees in Carbondale area. (Meyer). MISSOURI - Larvae full grown in southeast area and over half grown in central area. (Wkly. Rpt. Fr. Grs.). CALIFORNIA - Medium on peach and nectarine trees in Modesto area, Stanislaus County, and reported for the first time as light to heavy in local orchards in Gridley area, Butte County. (Cal. Coop. Rpt.).

GREEN PEACH APHID (Myzus persicae) - COLORADO - Continues a problem to many growers in Mesa County. Heavy some Delta County peach orchards, as high as 20 colonies per tree. (Ext. Ser., Exp. Sta.). WASHINGTON - Moderate on peaches in north central area. (Anthon). NEW MEXICO - Continues a problem in many peach orchards throughout State. (N. M. Coop. Rpt.). NEVADA - Light to moderate on apricot, cherry and peaches in Reno-Sparks area, Washoe County. (Bechtel).

CURCULIONIDS - NEW JERSEY - Adults active in blueberry fields in Hammonton last week. (Ins. Dis. Newsl.).

GARDEN SYMPHYLID (Scutigerella immaculata) - WASHINGTON - Causing severe damage to 40 acres of blueberries in Gate, Thurston County. (Howitt).

GRAPE MEALYBUG (Pseudococcus maritimus) - MISSOURI - Reported in Rosati area, eggs not hatched as yet. (Wkly. Rpt. Fr. Grs.).

PECAN NUT CASEBEARER (Acrobasis caryae) - OKLAHOMA - Five entries noted in 300 clusters examined in pecan orchard in Jefferson County. Heavy populations of overwintering larvae noted. Approximately 22-28 percent of 400 shoots examined were infested. (Flora). TEXAS - In pupal or adult stage throughout pecan growing areas of State. Egg laying started in south central area and expected to begin in west central and upper coastal areas May 20-25. (King).

PECAN LEAF CASEBEARER (Acrobasis juglandis) - VIRGINIA - Moderate on pecan trees in a Greensville County locality. (Morris, Rogers). NORTH CAROLINA - Three to 6 larvae per compound leaf on pecan in Hertford, Martin and Wake Counties. (Farrier et al.). ALABAMA - Light in several sections of State. (Grimes, Stephenson).

CIGAR CASEBEARER (*Coleophora occidentis*) - ALABAMA - Severe defoliation of small group of pecan trees occurred in Escambia County. Some in Pike and Montgomery Counties. (Grimes).

A SAWFLY (*Periclista* sp.) - ALABAMA - Damaging pecan trees in Covington County. (Stephenson, Arant).

MAY BEETLES (*Phyllophaga* spp.) - GEORGIA - Heavy on pecan and oak in Meriwether and Muscogee Counties. (Dyer). TEXAS - Continue to cause loss of leaves of pecan in Red River County. (Turney).

PLANT BUGS - ALABAMA - Large numbers feeding on new growth of pecans in central area. (Grimes).

MEXICAN FRUIT FLY (*Anastrepha ludens*) - MEXICO - One male fly taken in a trap in Tiajuana, Baja California. This is the first fly trapped in this area since August 1957. (PPC, Mex. Reg.).

SCALE INSECTS - NEVADA - Heavy on pear in Lovelock, Pershing County. (Snyder). ARIZONA - *Coccus pseudomagnoliarum* infesting grove northwest of Phoenix, Maricopa County. (Ariz. Coop. Sur.). CALIFORNIA - *Icerya purchasi* heavy on orange in Live Oak, Sutter County. *Aonidiella aurantii* heavy on orange in Piru, Ventura County. (Cal. Coop. Rpt.). TEXAS - *Chrysomphalus aonidum* general and medium to heavy on citrus in Cameron County. (Day). MISSOURI - *Lecanium nigrofasciatum* heavily infesting few peach orchards in Campbell vicinity. (Wkly. Rpt. Fr. Grs.). OHIO -About 80 percent of female *Lecanium corni* complex ovipositing at Wooster on May 14. (Rings). FLORIDA - *Pseudaulacaspis pentagona* severely damaging peach trees and *Protopulvinaria pyriformis* populations heavy on avocado trees at Holly Hill, Volusia County. *P. pyriformis* building up on untreated avocado trees in Palm Beach district and moderately heavy on mangoes in north central Dade district. (Fla. St. Plt. Brd., Apr. Rpt.).

SIX-SPOTTED MITE (*Eotetranychus sexmaculatus*) - FLORIDA - General over Seminole County, causing severe damage to grapefruit. Increasing in most citrus nurseries in west central area of State. (Fla. St. Plt. Brd., Apr. Rpt.).

TRUCK CROP INSECTS

COLORADO POTATO BEETLE (*Leptinotarsa decemlineata*) - NEW JERSEY - Light on tomatoes in Hammonton area. (Ins. Dis. Newsl.). MISSOURI - Much egg laying evident in Columbia area. (Wkly. Rpt. Fr. Grs.). OREGON - Adults present in Hermiston area, Umatilla County, during week May 4-9. (Goeden). MARYLAND - Adults and eggs common on potatoes in central and western areas. (U. Md., Ent. Dept.). DELAWARE - In fields where no control observed, adults common to prevalent and egg masses very abundant. (Burbutis, Conrad).

POTATO FLEA BEETLE (*Epitrix cucumeris*) - MARYLAND - Heavy on potatoes in Allegany and Washington Counties. (U. Md., Ent. Dept.). DELAWARE - Very abundant in a few fields of potatoes and tomatoes. (Burbutis, Conrad).

POTATO LEAFHOPPER (*Empoasca fabae*) - DELAWARE - Found for first time this season in Kent County on potatoes. (Burbutis, Conrad).

POTATO PSYLLID (*Paratrioza cockerelli*) - COLORADO - On lycium in Larimer County, one per 100 sweeps. (Ext. Ser., Exp. Sta.). UTAH - Five per 50 sweeps on rabbitbrush at Glendale, 9 per 50 sweeps on matrimonyvine at Gunnison and 2 per 50 sweeps on matrimonyvine at Fayette. (Knowlton).

GARDEN SPRINGTAIL (*Bourletiella hortensis*) - MARYLAND - Heavy on potatoes at Flintstone, Allegany County. (U. Md., Ent. Dept.).

EUROPEAN CORN BORER (Pyrausta nubilalis) - DELAWARE - First egg masses found on potatoes in Kent and New Castle Counties. (Burbutis, Conrad).

A CRICKET (Acheta sp.) - NEW MEXICO - Damaged tomato plants near Deming, Luna County. (N. M. Coop. Rpt.).

SUCKFLY (Cyrtopeltis minimus) - TEXAS - Heavy locally on tomatoes in Cameron and Kendall Counties. (Deer).

A STRIPED BLISTER BEETLE (Epicauta sp.) - GEORGIA - Light to moderate on tomatoes in Tattnall and Evans Counties. (Johnson).

TOMATO FRUITWORM (Heliothis zea) - ARKANSAS - Attacking tomatoes in southeastern area. (Boyer).

CABBAGE MAGGOT (Hylemya brassicae) - NEW YORK - Egg laying heavy in Nassau County. (N. Y. Wkly. Rpt.). MASSACHUSETTS - First eggs of season observed May 4, egg laying heavy during remainder of week. (Wheeler).

IMPORTED CABBAGEWORM (Pieris rapae) - NEW JERSEY - Heavy flight in northern area May 4-10. (Ins. Dis. Newsl.). GEORGIA - Heavy on cabbage in Colquitt, Thomas and Brooks Counties. (Johnson). MARYLAND - Infesting cabbage at Lanham, Prince Georges County, May 11. (U. Md., Ent. Dept.).

CABBAGE LOOPER (Trichoplusia ni) - GEORGIA - Heavy on cabbage in Colquitt, Thomas and Brooks Counties. (Johnson).

CABBAGE APHID (Brevicoryne brassicae) - MARYLAND - Infesting cabbage at Lanham, Prince Georges County, May 11. (U. Md., Ent. Dept.).

APHIDS - NEW MEXICO - Moderately heavy in several lettuce fields at Animas, Hidalgo County. (N. M. Coop. Rpt.).

FLEA BEETLES - MARYLAND - Phyllotreta sp. heavy on cabbage, kale and radishes in central and western areas. (U. Md., Ent. Dept.). NEW MEXICO - Heavy, some damage to cabbage in Luna County. (N. M. Coop. Rpt.).

HARLEQUIN BUG (Murgantia histrionica) - OKLAHOMA - Ranged up to 25 per plant in the Hugo area. (Goin, Vinson). Continued to damage a variety of garden plants throughout State. (Flora, Howell). TEXAS - Heavy, widespread on cabbage in Zavala County. (Prucia).

PEA APHID (Macrosiphum pisi) - OREGON - First infestations in peas, grown for processing, in northeastern area May 9. Infestation light. (Hanna). MARYLAND - Injuring untreated peas in Talbot County. (U. Md., Ent. Dept.).

BEAN LEAF BEETLE (Cerotoma trifurcata) - SOUTH CAROLINA - General in Piedmont area on beans. Eggs noted in Cherokee, York and Oconee Counties. (Nettles et al). OKLAHOMA - Ranged up to 5 per plant on beans in Jefferson and Carter Counties. (Flora). NORTH CAROLINA - Earliest infestation ever observed in beans in Duplin, Pamlico, Bladen and Columbus Counties. Some fields with all plants injured. (Scott). MARYLAND - Damaging beans in eastern Allegany County. (U. Md., Ent. Dept.).

MEXICAN BEAN BEETLE (Epilachna varivestis) - GEORGIA - Moderate to heavy on beans in Colquitt, Thomas, Brooks, Lowndes and Tattnall Counties. (Johnson). FLORIDA - Damaging beans in Mariana district. (Fla. St. Plt. Brd., Apr. Rpt.).

CUCUMBER BEETLES - UTAH - Numerous and especially damaging to squash in Washington County. (Knowlton). NEW MEXICO - Diabrotica undecimpunctata tenella heavy and damaging young melon plants in Virden Valley and causing minor damage to lettuce near Animas, Hidalgo County. (N. M. Coop. Rpt.).

BEAN APHID (*Aphis fabae*) - NEVADA - Heavy infestation on sugar beets at Logandale, Clark County. (Zoller, May 8).

BEET LEAFHOPPER (*Circulifer tenellus*) - OREGON - Light in Hermiston area, Umatilla County, during week May 4-9. Predominantly adults and a few nymphs. (Goeden).

FALSE CHINCH BUGS (*Nysius* spp.) - UTAH - More numerous than normal on sugar beets in Washington County and in Paragonah-Parwan area of Iron County. (Knowlton).

WIREWORMS - OREGON - Damaging sugar beets in Hermiston area, Umatilla County, week May 4-9. Caused 30 percent damage to some fields. (Goeden).

CUTWORMS - MICHIGAN - Very active on asparagus in Berrien, Newaygo and Oceana Counties, May 11. (Hutson).

ASPARAGUS MINER (*Melanagromyza simplex*) - DELAWARE - Adults common in asparagus fields in New Castle and Sussex Counties. (Burbutis, Conrad).

ASPARAGUS BEETLES (*Crioceris* spp.) - DELAWARE - Adults of *C. duodecimpunctata* and larvae of *C. asparagi* found for first time this season. (Burbutis, Conrad). RHODE ISLAND - *C. duodecimpunctata* adults found on asparagus in East Greenwich, May 11. (Hannah). OREGON - Adults of *C. asparagi* present in Hermiston area, Umatilla County, during week May 4-9. (Goeden).

ONION MAGGOT (*Hylemya antiqua*) - MICHIGAN - Quite active at Hopper, Bath and Pullman May 12, with eggs being laid at Hopper and Bath. (Hutson). WASHINGTON - Light flights at Walla Walla. (Woodworth).

SEED-CORN MAGGOT (*Hylemya cilicrura*) - WASHINGTON - Heavy flights at Walla Walla. (Woodworth).

GARDEN SYMPHYLID (*Scutigerella immaculata*) - WASHINGTON - Destroyed early plantings of onions and spinach at Bellingham, Whatcom County. (Howitt).

STRAWBERRY ROOT WEEVIL (*Brachyrhinus ovatus*) - MONTANA - Damaged strawberry plants in Hill County. (Roemhild).

WEEVILS - NEW JERSEY - Still doing some damage to strawberries. (Ins. Dis. Newsl.). NEW YORK - Heavy infestation of *Anthonomus signatus* observed in strawberries in Calveton, Suffolk County, May 7. (N. Y. Wkly. Rpt.).

SPIDER MITES - NEW JERSEY - Still numerous in some strawberry fields. (Ins. Dis. Newsl.). NORTH CAROLINA - *Tetranychus* spp. severe in many strawberry plantings in southeastern counties. (Scott). NEW YORK - *T. telarius* heavy in Suffolk County strawberry plantings. (N. Y. Wkly. Rpt.).

LEAF ROLLERS - NEW JERSEY - Eggs beginning to hatch in strawberries. Moth flights strong in Cumberland and Salem Counties but light around Hammonton. (Ins. Dis. Newsl.). NEW YORK - *Ancylis comptana fragariae* observed May 7 in Suffolk County. (N. Y. Wkly. Rpt.). INDIANA - *A. comptana fragariae* is mostly between broods in Orleans area. (Marshall).

TOBACCO INSECTS

TOBACCO FLEA BEETLE (*Epitrix hirtipennis*) - NORTH CAROLINA - Severe in untreated fields in Johnston County with over 100 holes per tobacco leaf. Untreated fields in Edgecombe County with severe infestations. (Guthrie).

TOBACCO BUDWORMS (*Heliothis* spp.) - GEORGIA - Moderate to heavy on tobacco in 14 tobacco-producing counties. (Johnson). NORTH CAROLINA - From 5 to 10 percent of tobacco plants infested in Duplin, Pender, Bladen and Columbus Counties. (Scott).

TOMATO HORNWORM (*Protoparce quinquemaculata*) - NORTH CAROLINA - First adult of season taken in Granville County on May 12. (Chamberlin).

A WIREWORM (*Conoderus* prob. *vespertinus*) - NORTH CAROLINA - Untreated fields with 67 percent of plants infested in Johnston County and 71 percent in Edgecombe County. (Guthrie).

COTTON INSECTS

BOLL WEEVIL (*Anthonomus grandis*) - TEXAS - Averaged 84 per acre in 26 fields inspected in McLennan and Falls Counties compared with 101 per acre in 14 fields in the corresponding week of 1958. (Parencia et al.). Being found in more fields each week throughout the lower Rio Grande Valley. (Deer). LOUISIANA - Range 0-200 per acre, average 41 per acre, in 6 of 14 fields examined in Madison Parish. Percentage of survival in hibernation cages to May 15 was 0.66 percent compared with 2.04 at same time in 1958. (Smith et al.). MISSISSIPPI - None found in Stoneville area. (Merkl et al.). ALABAMA - Emerging from hibernation in central area. (Rawson).

A CURCULIONID (*Macrorhoptus* sp.) - CALIFORNIA - Medium in cotton squares in Westmorland area of Imperial County. (Cal. Coop. Rpt.).

A WEEVIL (*Compsus auricephalus*) - TENNESSEE - Found in Lauderdale County on cotton. (Mullett).

STRIPED FLEA BEETLE (*Phyllotreta striolata*) - ALABAMA - Heavy in one field in Madison County. From 1 to 3 acres in sections have been completely destroyed. (Grimes).

BOLLWORMS (*Heliothis* spp., et al.) - GEORGIA - Light on cotton in Tattnall and Bulloch Counties; 2 larvae per 100 terminals in Tattnall County and 3 in Bulloch County. First report of season on cotton. (Johnson). TEXAS - Continue to cause some terminal damage in lower Rio Grande Valley. (Deer). MISSISSIPPI - Moth catches of *H. zea* very low in Stoneville area. (Merkl et al.). CALIFORNIA - *H. virescens* medium on flowers and squares in Westmorland, Imperial County. (Cal. Coop. Rpt.).

BEET ARMYWORM (*Laphygma exigua*) - ARIZONA - Increasing on cotton in Maricopa, Pinal and Pima Counties; 90 percent of plants show feeding damage some fields. (Ariz. Coop. Sur.). CALIFORNIA - Medium in Niland area and light in Westmorland area of Imperial County. (Cal. Coop. Rpt.).

CUTWORMS - MISSISSIPPI - Spotty but heavy in fields which were planted behind vetch or wild peas in the Stoneville area. (Merkl et al.). ARKANSAS - *Agrotis ypsilon* scattered and reducing stands in eastern area. (Ark. Coop. Sur.).

CABBAGE LOOPER (*Trichoplusia ni*) - CALIFORNIA - Beginning to damage cotton in Niland area of Imperial County. (Cal. Coop. Rpt.).

COTTON LEAF PERFORATOR (*Bucculatrix thurberiella*) - CALIFORNIA - Appearing in Niland area of Imperial County. (Cal. Coop. Rpt.).

THRIPS - SOUTH CAROLINA - Attacking early-planted cotton, will be laying eggs soon. (Cott. Lett.). GEORGIA - *Frankliniella* sp. light on cotton in 9 counties. (Johnson). MISSISSIPPI - Tremendous numbers on alternate hosts but there is little movement to cotton in the Stoneville area. (Merkl et al.). LOUISIANA - Counts made in 46 fields in Madison Parish; all infested. Averaged 2.66 per plant and ranged 0.06-18.44 per plant. Heavy populations of nymphs appearing and damage is apparent. (Smith et al.). TEXAS - Increase in McLennan and Falls Counties over last week. Now showing injury. (Parencia et al.).

Generally light in most areas, with some isolated medium to heavy populations. (Gaines). NEW MEXICO - Building up rapidly many fields in southern Dona Ana County. (N. M. Coop. Rpt.). ARIZONA - Continue to increase in many Maricopa and Pinal County fields and in the Marana area of Pima County. Cotton in Rainbow Valley area of Maricopa County is heavily infested. (Ariz. Coop. Sur.).

APHIDS - NEVADA - *Aphis gossypii* damaging seedling cotton in Pahrump Valley, Nye County. (Zoller, May 8). NEW MEXICO - Occasional colony of *Aphis medicaginis* in Dona Ana, Luna and Hidalgo Counties. (N. M. Coop. Rpt.). TEXAS - Decreased in lower Rio Grande Valley. (Deer). *A. gossypii* moderate in one, light in 7, and none in 18 fields inspected in McLennan and Falls Counties. (Parencia et al.). LOUISIANA - Present in many fields in Madison Parish. Predators becoming general. (Smith et al.). ARKANSAS - *A. gossypii* common in eastern area. (Boyer). MISSISSIPPI - Light to heavy on seedling cotton. Several thousand acres treated in area around Scott. (Merkl et al.).

SPIDER MITES - TEXAS - Light but increasing in lower Rio Grande Valley. (Deer). LOUISIANA - Heaviest infestations adjacent to ditchbanks and road shoulders. More general than usual this early in season in Madison Parish. (Smith et al.). MISSISSIPPI - Light in several fields in Stoneville area. (Merkl et al.).

FLEAHOPPERS - TEXAS - Continue to increase and many infestations severe in lower Rio Grande Valley. (Deer). *Psallus seriatus* adults found in 8 fields and few nymphs in occasional fields in McLennan and Falls Counties. (Parencia et al.).

A FALSE CHINCH BUG (*Nysius raphanus*) - NEW MEXICO - Severely damaged cotton field near Las Cruces. Common, 40-50 nymphs per cotton seedling. (N. M. Coop. Rpt.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

A PINE TIP MOTH - ARKANSAS - Activity of first adult brood complete in southern part of State and tapering off sharply in northern areas. Infestations appear lighter than in 1958. Larval feeding damage appearing some plantings. (Ark. For. Pest Rpt.).

ZIMMERMAN PINE MOTH (*Dioryctria zimmermani*) - INDIANA - Infesting a 13-year-old planting of white pine at La Porte, La Porte County. Infestation averages one brood tree per acre. (Schuder).

BARK BEETLES - ARKANSAS - Some increase in activity of *Ips* spp. noted in vicinities of Amity, Malvern and Ozark. Additional *Dendroctonus terebrans* activity noted in south central area near Camden, Hampton and Glenwood. About 200 trees treated near Glenwood. (Ark. For. Pest Rpt.). NEVADA - *Ips oregoni* heavy in felled timber in large housing subdivision near Zephyr Cove, Douglas County. (Bechtel, Lauderdale).

WHITE-PINE WEEVIL (*Pissodes strobi*) - WISCONSIN - Feeding in northeastern section of State. (Wis. Coop. Sur.).

SARATOGA SPITTLEBUG (*Aphrophora saratogensis*) - WISCONSIN - Local egg counts quite high in Vilas County. (Wis. Coop. Sur.).

AN APHID (*Eulachnus agilis*) - PENNSYLVANIA - Abundant on needles of red pine, several large plantations, Fayette County. Det. J. O. Pepper. (Udine).

A PINE SAWFLY (*Neodiprion pratti pratti*) - VIRGINIA - Severe on pines in western and northwestern Henrico County (Davis), severe on pines in areas of Prince William County (Trenary), heavy on pines in southeastern Halifax County (Meyers) and severe in Goochland County with timber selling below market price (Truett). MARYLAND - Numerous reports of injury to Virginia pine in Montgomery and Prince Georges Counties. (U. Md., Ent. Dept.).

PINE SAWFLIES - WISCONSIN - *Neodiprion nanulus* eggs hatched May 6 in Columbia County. (Wis. Coop. Sur.). ARKANSAS - Infestations light and spotty in Calhoun County and those near Crossett, Ashley County, reported as lightest in years. Damage for 1959 not expected to be heavy. (Ark. For. Pest Rpt.). LOUISIANA - *Neodiprion* sp. heavily infesting pine in northern part of State. (Spink).

A PINE PITCH MIDGE (*Retinodiplosis resinicola*) - SOUTH CAROLINA - Apparently increasing in abundance in northwestern part of State. (Nettles et al.). ARKANSAS - Infestations remain active in local areas. (Ark. For. Pest Rpt.).

A SPIDER MITE- LOUISIANA - *Oligonychus milleri* heavy on pines in northern part of State. (Spink).

SPRUCE BUDWORM (*Choristoneura fumiferana*) - MINNESOTA - Larvae observed mining old leaves of balsam near International Falls May 4. (Minn. Ins. Rpt.).

COOLEY SPRUCE GALL APHID (*Chermes cooleyi*) - PENNSYLVANIA - Hatching on blue spruce in Centre County and quite plentiful. (Pepper).

BAGWORM (*Thyridopteryx ephemeraeformis*) - ALABAMA - Limited activity on redbud trees in Montgomery County. (Grimes).

LARCH CASEBEARER (*Coleophora laricella*) - PENNSYLVANIA - Pupating on Japanese larch in Franklin and Lycoming Counties, spring population high in latter county. (Drooz). WISCONSIN - Pupae present in Dane County. (Wis. Coop. Sur.).

GYPSY MOTH (*Porthetria dispar*) - RHODE ISLAND - First hatch observed in Glocester area May 4. (Mathewson).

CANKERWORMS - IOWA - Active throughout southern half of State. Heaviest at Shenandoah where elms and other shade trees are being defoliated one section of town. Larvae about one-fourth inch long in central area. (Iowa Ins. Inf.). NEBRASKA - Heavy populations of *Paleacrita vernata* in scattered eastern locations. (Roselle). KANSAS - Active stripping of trees by *P. vernata* widespread over most of State. Larval-feeding essentially complete. (Knutson).

TENT CATERPILLARS (*Malacosoma* spp.) - RHODE ISLAND - *M. americanum* unusually abundant locally. (Mathewson). PENNSYLVANIA - Complete defoliation of wild cherry by *M. americanum* in southwestern part of State causing migration to other trees. (Udine). *M. disstria* larvae common in Franklin County. (Drooz). Disease hit some *M. disstria* larvae soon after congregation on sugar maple in Somerset County, but great numbers still remain. As this is third year of possible defoliation, spraying is underway. (Udine). Present on ash at State College, Centre County. (Gesell). OHIO - Heavy throughout eastern and southwestern counties. (Neiswander). WISCONSIN - *M. disstria* hatched May 8 in Douglas County and May 2 in northeastern portion of State. *M. americanum* tents about two inches in northeastern area and 2 - 12 inches in southern counties. (Wis. Coop. Sur.). MINNESOTA - *M. disstria* began hatching in Little River area of Duluth and north of Colquet May 8. (Minn. Ins. Rpt.). NORTH DAKOTA - Eggs of *M. disstria* hatching in native timber stands at Fort Totten where severe defoliation occurred in 1958. (N. D. Ins. Rpt.). UTAH - Unusually troublesome in Weber and Box Elder County orchards (Davis) and into Salt Lake County (Knowlton). CALIFORNIA - Heavy migrations of *Malacosoma* sp. larvae in Cooks Station area, Amador County. (Cal. Coop. Rpt.).

AN ALDER FLEA BEETLE (*Altica* sp.) - IDAHO - Adults common in Bonner, Kootenai, Nez Perce and Latah Counties. (McPherson et al.). Abundant on willow south of Coeur d'Alene, with considerable feeding occurring on unfolding leaves. (Foote).

ELM LEAF BEETLE (*Galerucella xanthomelaena*) - NEVADA - Adults active in Yerington, Lyon County, and Reno, Washoe County. (Bechtel, Hilbig). DELAWARE - First adults and eggs noted on elm in Sussex County. (Burbutis, Conrad).

MAY BEETLES (*Phyllophaga* spp.) - VIRGINIA - Very heavy flights observed in Blacksburg area, Montgomery County, for past two weeks. (Morris). LOUISIANA - Stripping foliage from pecan, elm, persimmon and oak trees in northern part of State. (Spink). OKLAHOMA - Heavy populations, 2 per leaf, continued to defoliate trees in Pushmataha County. Some oak, black gum and persimmon trees completely defoliated. (Goin). TEXAS - Continued to cause loss of leaves of pecan and oak trees in Red River County. (Turney).

A WEEVIL (*Odontopus calceatus*) - TENNESSEE - Very heavy on poplar in Scott County. (Bennett).

A BIRCH APHID (*Calaphis betulaecolens*) - CALIFORNIA - Medium on white birch in Chico area, Butte County. (Cal. Coop. Rpt.).

APHIDS - NEW YORK - Unusually early on oaks in Ulster County. Leaves being damaged. (N. Y. Wkly. Rpt.). DELAWARE - *Macrosiphum liriodendri* building up on tulip trees and *Drepanaphis acerifoliae* abundant on Norway maple in New Castle County. (Burbutis, Conrad, Connell). MISSOURI - Numerous species present and causing some damage to various ornamentals and some crops. (Wkly. Rpt. Fr. Grs.). NEBRASKA - Numerous species building up on several ornamentals. (Roselle). NEW MEXICO - Heavy infestations on narrow-leaf poplar trees at Virden, Hidalgo County. *Anuraphis tulipae* heavy on iris in Dona Ana and Luna Counties. (N. M. Coop. Rpt.). NEVADA - *Cinara* sp. heavy on *Juniperus* spp. and *Thuja* spp. in Reno and Sparks, Washoe County. (Bechtel, Hilbig).

BIRCH LEAF MINER (*Fenusa pusilla*) - VERMONT - Adults laying eggs on unfolding leaves of white birch, May 6. (MacCollom).

SAWFLIES - MARYLAND - Undetermined species feeding on ash at White Oak, Montgomery County. (U. Md., Ent. Dept.). DELAWARE - Unidentified species present to common on black locust in Kent and New Castle Counties. *Nematus ventralis* larvae prevalent on weeping willow in western Kent County. (Burbutis, Conrad).

AN OLEANDER CATERPILLAR (*Syntomeida epilais jucundissima*) - FLORIDA - Active and requiring control in many localities in Broward County. Damage moderate at present. (Fla. Coop. Sur.).

HARLEQUIN BUG (*Murgantia histrionica*) - OKLAHOMA - Ovipositing on lilac in Payne County. (Walton).

A HOLLY BUDMOTH (*Rhopobota naevana ilicifoliana*) - OREGON - Overwintering eggs hatching and young larvae present week of May 11-16. (Larson).

BOXWOOD LEAF MINER (*Monarthropalpus buxi*) - MASSACHUSETTS - Abundant at East Wareham, May 7, and 50 percent pupated. (Wheeler). MARYLAND - Adults on boxwood at College Park, Prince Georges County. (U. Md., Ent. Dept.). DELAWARE - Adult emergence noted May 8. (MacCreary).

SCALE INSECTS - INDIANA - *Lecanium fletcheri* heavy on *Taxus* spp. and junipers at Buffton, Wells County, and at Lafayette, Tippecanoe County. Females laying eggs. (Schuder). CALIFORNIA - *Parlatoria oleae* heavy on Modesto ash in Coalinga, Fresno County. *Epidiaspis piricola* medium on California holly in Kentfield, Marin County, and *Saissetia oleae* heavy on euonymus shrubs in Patterson, Stanislaus County. *Icerya purchasi* medium on aralia in Blythe, Riverside County. (Cal. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - MINNESOTA - Heavy, general rains May 3-11 resulted in heavy hatch of *Aedes* spp. in Twin City area. Most larvae now in second and third instars. Cool temperatures May 11-15 slowed development. Of 423 larval collections, 320 were small *Aedes* spp. *Culiseta inornata* was recovered in 37 larval collections and adults were found in low numbers in 3 of 10 light trap collections. (Minn. Ins. Rpt.). WISCONSIN - Appearing in Polk County. (Wis. Coop. Sur.). NORTH CAROLINA - *Aedes sollicitans* adults quite abundant in marshes of Hyde County. (Ashton). UTAH - Larvae abundant in some meadow areas in Tooele, Davis, Utah and Cache Counties. Adults becoming more common around communities. (Knowlton). NEVADA - *Aedes dorsalis*, *A. melanimon*, *A. nigromaculis*, *Anopheles freeborni* and *Culex tarsalis* adults present in moderate numbers in Fallon area, Churchill County, and light in Reno-Sparks area, Washoe County. *Aedes vexans* adults emerging in Dayton, Lyons County. (Chapman). FLORIDA - Very severe in unsprayed areas of Brevard County, increased in Orange County after heavy rains and increased over Volusia County. Populations sparse in north central Dade district, moderate in Palm Beach area and again heavy in the Indian River area. Populations increased in 9 west coastal counties. (Fla. St. Plt. Brd., Apr. Rpt.).

A BLACK FLY (*Simulium venustrum*) - MARYLAND - Annoying humans at Glen Burnie, Anne Arundel County. (U. Md., Ent. Dept.).

CATTLE GRUBS (*Hypoderma* spp.) - VIRGINIA - Adults emerging and running cattle in Montgomery, Bland and Tazewell Counties. (Morris, Ames).

HORN FLY (Siphona irritans) - NORTH CAROLINA - Numerous on dairy cattle in Wake County. (Jones). OREGON - First adults of season in Sherman County observed May 13. (Every). OKLAHOMA - Populations averaged 100 per animal on 15 beef cows checked in Rattan area and 200 per animal on 3 bulls. (Goin). NEW MEXICO - Heavy populations pestering dairy and range cattle in Grant, Sierra, Hidalgo and Luna Counties. (N. M. Coop. Rpt.).

A BLOODSUCKING CONENOSE (Triatoma sp.) - TEXAS - Heavy infestations around homes, business houses and oil field housing areas in Ward County. (Texas Coop. Rpt.).

TICKS - WISCONSIN - Prevalent in many sections of the State. (Wis. Coop. Sur.). MONTANA - Dermacentor andersoni very abundant in southern area of State. (Roemhild). OKLAHOMA - Counts averaged 65 per animal on 15 beef cows checked in Rattan area. Mostly Amblyomma americanum. (Goin).

BENEFICIAL INSECTS

LADY BEETLES - NEBRASKA - Development slow generally due to temperatures. Averaged one adult per 10 sweeps in alfalfa and sweetclover and 2 in wheat. (Roselle). KANSAS - All stages observed in most fields in northeastern and east central areas. Adults and larvae averaged up to 4-5 per sweep. Hippodamia convergens predominant species. (Peters). OKLAHOMA - H. convergens ranged up to 2.5 per sweep some Arkansas River bottom alfalfa fields in east central area (VanCleave); becoming abundant many east central alfalfa fields (Robinson); 0.5-6 per sweep in alfalfa fields in Choctaw County (Goin, Vinson); medium numbers in a Payne County alfalfa field (Stiles); light in 2 Caddo County fields (Hudson); 2-5 per square foot of crown area in 3 Tillman County alfalfa fields (Hatfield); and light in alfalfa field in Cimarron County (Owens). IDAHO - Common in Latah and Nez Perce County alfalfa fields. (Portman et al.).

LACEWINGS (Chrysopa spp.) - NEBRASKA - Numbers remain low, 1 per 10 sweeps, most fields. (Roselle). KANSAS - Adults and larvae observed most fields in northeastern and east central areas and averaged up to 3 per sweep. (Peters). OKLAHOMA - Averaged up to 0.5 per sweep in east central alfalfa fields (VanCleave) and up to 2 per sweep in Choctaw County, with heavy egg laying noted in one field (Goin, Vinson). IDAHO - Common in alfalfa fields in Latah and Nez Perce Counties. (Portman et al.). UTAH - Adults common in northern areas of State. Larvae numerous, attacking black cherry aphid at Brigham City and other species on maples at Farmington. (Knowlton).

NABIDS (Nabis spp.) - NEBRASKA - Populations increasing in alfalfa. Averaged 5 per 10 sweeps in southeast area. (Roselle). KANSAS - Adults and larvae averaged up to 2 per sweep in most fields in northeastern and east central areas. (Peters). OKLAHOMA - Averaged up to 0.8 per sweep in east central alfalfa fields (VanCleave); common in east central alfalfa fields (Robinson); and ranged up to 0.3 per sweep in alfalfa fields checked in Choctaw County (Goin, Vinson). IDAHO - Common in alfalfa fields in Latah and Nez Perce Counties. (Portman et al.).

BIG-EYED BUGS (Geocoris spp.) - IDAHO - Populations generally low in alfalfa and clover fields in Latah and Nez Perce Counties. (Foote).

INSIDIOUS FLOWER BUG (Orius insidiosus) - OKLAHOMA - Common in east central alfalfa fields, up to 0.8 per sweep some fields. (Van Cleave). Ranged 0-2 per sweep in some Choctaw County alfalfa fields. (Goin, Vinson).

SYRPHIDS - MASSACHUSETTS - Several species especially abundant on apple buds this season. (Wheeler). OREGON - Larvae increasing in Willamette Valley cherry orchards. (Stevenson).

A KLAMATHWEED BEETLE (*Chrysolina gemellata*) - IDAHO - Adults abundant on scattered klamathweed plants west of Myrtle, Nez Perce County. (Foote).

A GORSE WEEVIL (*Apion ulicis*) - OREGON - Introduced in Coos County in 1955 as a means of gorse suppression. Abundant at site of original release on May 9. (Every).

MISCELLANEOUS INSECTS

PERIODICAL CICADA (*Magicicada septendecim*) - TENNESSEE - Thirteen-year-variety beginning to emerge in central part of State. (Mullett). NORTH CAROLINA - Emerged in Person, Vance, Randolph, Davidson, Chatham, Stanly, Halifax, Hertford, Nash and Orange Counties. (Green et al.). SOUTH CAROLINA - Emerging in Abbeville, Greenwood, McCormick, Edgefield and York Counties, and extremely heavy in wooded areas throughout Saluda County. (Nettles et al.). GEORGIA - Heavy broods reported from Baldwin, Lincoln, Floyd, Wilkes, Butts, Oglethorpe, Houston and Putnam Counties. (Blasingame, Lund, Robertson, Jordan, Johnson). ALABAMA - Emerged during week of May 8, with peak during first part of week. Activity reported from nearly all sections of State. (Grimes). INDIANA - Small number of adults emerging along Ohio River floodplain in Hovey Lake region, Posey County. (Chandler). MISSOURI - Emergence of thirteen-year-variety begun in east central area of State. (Kyd, Thomas, Munson). Adults taken in Columbia May 9. (Wkly. Rpt. Fr. Grs.).

A ROUNDHEADED WOOD BORER (*Saperda cretata*) - ALABAMA - Collected for the first time in the State in a light trap in Tallapoosa County. (Good).

WESTERN SUBTERRANEAN TERMITE (*Reticulitermes hesperus*) - OREGON - Winged forms appearing in many areas during first half of May. Damage from this species increasing. (Every).

COLLEMBOLA - ARKANSAS - Tremendous numbers in worm beds in Jackson County resulting in reduction of earthworms. Worm production for fish bait seriously reduced. (Ark. Ins. Sur.).

SEED-CORN MAGGOT (*Hylemya cilicrura*) - VIRGINIA - Large numbers of adults dead and sticking to leaves of plants, clothes lines, etc. in Richmond. They were killed by a white fungus. They appear to be sucking the plants, but they are dead. Det. C. W. Sabrosky. The fungus will be studied by USDA. (Matheny). Specimens have been received from, or seen, in all parts of the State. (Morris, Amos, Rowell).

CORRECTIONS

CEIR 9(20) : 371 - GRASSHOPPERS - MINNESOTA - Melanoplus bivittatus should read Melanoplus *bilituratus*.

CEIR 9(20) : 372 - APPLE GRAIN APHID should read (Rhopalosiphum *fitchii*).

CEIR 9(20) : 373 - BRONZED CUTWORM should read (*Nephelodes* emmedonia).

CEIR 9(20) : 393 - Under BIG-EYED BUGS, OKLAHOMA should read, INSIDIOUS FLOWER BUG (*Orius insidiosus*) - OKLAHOMA - etc.

CEIR 9(20) : 398 - Legend for illustrations should read, Adult*s* and Larva of Bupalus piniar*i*us.

LIGHT TRAP COLLECTIONS

	Pseud.	Agrot.	Prod.	Perid.	Protoparce		Heliothis	
	unip.	yps.	ornith.	marg.	quinq.	sexta	zea	vires.
ALABAMA								
Auburn 5/12, 15	2	2			4		2	
Crossville 5/12	2	1		2			4	5
ARIZONA								
Mesa 5/6-12			32	51			47	
FLORIDA								
Gainesville 5/13			5					
Monticello 5/12						2	1	
ILLINOIS								
Urbana 5/8-14	23	15		2				
INDIANA (County)								
Tippecanoe 5/9-13	75	3	1	2				
KANSAS								
Garden City 5/5-7, 9-13	5	2		7			4	
Hays 5/7,9,12	3			6			2	
Manhattan 5/9-15	6	6	1	4			7	
LOUISIANA								
Baton Rouge 5/8-14	92	27	34	59			15	
Curtis 5/11	3	1		1		3	16	
Franklin 5/13				5			3	
MARYLAND								
Fairland 5/8-14	8	7		3				
MISSISSIPPI								
*Stoneville 5/9-15	43	89	70	18		4	60	
MISSOURI								
Columbia 5/7-12	67	23	7	4			63	
Sikeston 5/8-15	8	4					6	1
NEBRASKA								
Scotts Bluff 5/1-7	2	1		10			4	
NORTH CAROLINA								
Clayton 5/14		2	1		1	3	3	
Faison 5/14		5	3			2	3	
OREGON								
*Salem 5/6-14		5						
SOUTH CAROLINA								
Charleston 5/4-17	22	45	15	6	3	17	35	4
Clemson 5/8-15	15	9	8	2	30	4	64	1
SOUTH DAKOTA 5/8,15	7			12				

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*Four traps - Stoneville; 2 traps - Salem

LIGHT TRAP COLLECTIONS - Continued

	Pseud.	Agrot.	Prod.	Perid.	Protoparce		Heliothis	
	unip.	yps.	ornith.	marg.	quinq.	sexta	zea	vires.
TENNESSEE (Counties)								
Blount 5/5-11	84	8	4	8			8	
Cumberland 5/5-11	4	3		8			2	
Greene 5/5-11	49	5		1			5	
Johnson 5/5-11	288	41		7				
Madison 5/5-11	56		14				92	
Maury 5/5-11	33	2	9	4			3	
Monroe 5/5-11	24			9			3	
Robertson 5/5-11	7		2	2			2	
TEXAS								
Brownsville 5/1-8	1	16	1	1			1	
Waco 5/9-15	14		9	20			28	

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(Weather continued from page 400)

deluge in a 50-minute period. Extremely dry weather continued from central California, Nevada and southwestern Colorado southward. No precipitation was reported anywhere in Arizona during the week. Good showers, beginning on Thursday and continuing through the weekend, covered the Pacific Northwest. Precipitation amounts exceeding 1 inch were reported from Washington and Oregon west of the Cascades, and in scattered sections of Idaho and western Montana. Rain was mixed with snow over the higher elevations from California northward. (Summary supplied by U. S. Weather Bureau).

A STATUS REPORT ON FOREST INSECT CONDITIONS IN THE UNITED STATES - 1958

Compiled by
Division of Forest Insect Research

CONDITIONS IN BRIEF

The scope and severity of forest insect infestation in the United States during 1958 were not markedly changed from conditions existing in 1957. While some of the pest species increased in numbers in some sections of the country, other species declined elsewhere thus offsetting what otherwise would have been more damage and destruction than in prior years.

1. Several species of bark beetles occurred in outbreak numbers in many places in the coniferous forests of the West and South but the extent of outbreaks and their severity were somewhat reduced from prior years. The reduction of bark beetle infestations was brought about largely by suppressive control action on the part of public and private agencies. Low winter temperatures, however, particularly in the southeastern States, also killed a large percentage of southern pine beetle broods, thus aiding the effectiveness of direct control action in that area. Nationwide, a total of 784,517 infested trees, cull logs, and stumps were treated with insecticides or salvaged from outbreak areas.

2. The spruce budworm continued in epidemic status in much of the spruce-fir forests from coast to coast. Infestations were most severe in Maine, Minnesota, the northern Rocky Mountains, Arizona and eastern Oregon. Lesser infestations occurred in Wisconsin and Michigan; in the central and southern Rockies; in New Mexico; and in one area in northeastern California. Aerial spraying to reduce epidemic populations and thus prevent damage and destruction of forest stands was undertaken on a total of 1,231,911 acres;301,861 in Maine; 12,000 in Minnesota; 100,000 in Arizona and 818,050 in Oregon. A lesser acreage is expected to be sprayed during 1959.

3. A variety of other defoliating insects occurred in outbreak numbers in all sections of the country. Several species of pine sawflies were particularly abundant in the East and South; needleminers were destructive in the West; tent caterpillars were numerous in the Lake States, the Northeast and the Southwest; and loopers, leafrollers, webworms, tussock moths were abundant in various other places nationwide. Aerial spraying on 11,066 acres was undertaken to suppress epidemic populations, and in most instances excessive damage to the forest resource was averted.

4. Twig and terminal-feeding insects were quite prevalent in most sections of the country and excessive damage was caused in many places, particularly in areas where pine stands are being regenerated by planting. Suppressive action for control on some 5,000 acres was initiated against such pests as the white pine weevil, European pine shoot moth, Saratoga spittlebug and pine reproduction weevils in many areas to protect plantations and reproduction.

5. The balsam woolly aphid continued in epidemic proportions in large areas in the Northeast and in the Pacific Northwest, and the pest was destructive in stands of Fraser fir in the Southeast. Major effort was made during the year to introduce and establish predaceous beetles from Europe and Japan for biological control. Effectiveness of the predators in control of the aphid is not yet known, but there are indications of successful colonization of two of the species liberated.

6. Outbreaks of the Douglas-fir tussock moth were discovered for the first time in fir forests of New Mexico and at a new location in Arizona. In addition, the New Mexico fir looper re-appeared in outbreak numbers on a portion of the Lincoln National Forest, the first since 1952. These infestations, discovered late in the year, will be treated during 1959 in an effort to prevent undue loss of the resource being attacked.

CONDITIONS IN ALASKA

Forest insect activity in Alaska increased during the year and continuing infestations at moderate levels are expected in several areas in 1959. The Alaska spruce beetle increased in portions of the white spruce stands on the Kenai Peninsula and for the first time in two years, new infestation centers of hemlock sawfly and black-headed budworm occurred at several locations in southeast Alaska. The spear-marked black moth which erupted as an epidemic in stands of paper birch on some 5,900,000 acres near Fairbanks in 1957 began to decline during the summer months due to parasites and a disease organism affecting the larval populations. The Sitka spruce beetle was endemic over its entire range and no further damage was reported by Ips beetles. There was no direct action undertaken to suppress any of the insect infestations in Alaska.

CONDITIONS IN CALIFORNIA

Losses due to forest insects decreased to some extent in California. In some of the high elevation recreational forests, however, this was not the case. Lodgepole pine, in particular, continued to sustain severe infestations of the mountain pine beetle and lodgepole needleminer. Jeffrey pine in these high elevation forests also was damaged by Jeffrey pine beetle and late in the year signs of increased bark-beetle activity began to show up in several localities throughout the state. The status of the major insects is as follows: The western pine beetle in ponderosa pine decreased; the mountain pine beetle in lodgepole pine increased; the Jeffrey pine beetle was active in many parts of the state; the Douglas-fir beetle showed signs of increased activity in northwestern California; the California flatheaded borer in ponderosa and Jeffrey pine occurred in outbreak numbers in southern California; pine engravers caused little damage early in the year, but showed signs of increasing late in the fall; the fir engraver was epidemic in only a few local areas; the lodgepole needleminer remained epidemic in lodgepole pine, with one new center of infestation discovered; seed and cone insects caused serious damage and for the first time in many years Douglas-fir engraver infestations were common in young Douglas-fir in northwestern California. Suppressive action to control bark beetles and flatheaded borer was intensified in southern California and a method was developed for control of the lodgepole needleminer.

CONDITIONS IN OREGON AND WASHINGTON

Outbreaks of forest insects in Oregon and Washington totalled slightly over 2 million acres, approximately the same as occurred in 1957. The spruce budworm, balsam woolly aphid, Douglas-fir beetle, mountain pine beetle, and western pine beetle accounted for most of the outbreak acreages. Aerial spraying of 818,050 acres, coupled with natural control, reduced the spruce budworm to the lowest point since 1947 and the population trend is downward. Tree-killing by the balsam woolly aphid declined, but the area affected expanded and the insect population flared up late in the season. Efforts were intensified during the year to introduce predaceous beetles from Europe and Japan for biological control of the aphid infestations. A severe outbreak of the Douglas-fir beetle developed in southern Oregon but there were indications that the infestation will decline during 1959. The western pine beetle and mountain pine beetle flared up generally in the pine regions of both states but only the former species is viewed with alarm currently. Suppressive control for the Douglas-fir beetle was limited to salvage of infested trees. The selective removal of high risk trees from eastside stands of ponderosa pine was intensified as an indirect measure for control of western pine beetle.

CONDITIONS IN THE NORTHERN AND SOUTHERN ROCKY MOUNTAINS.

Forest insect infestations in the northern Rocky Mountains were similar in most respects to conditions during the previous year. Bark beetle activity, especially that of the mountain pine beetle increased and the Douglas-fir beetle appeared to be entering a new cycle of destructiveness. The Engelmann spruce beetle was epidemic only in local areas in and adjacent to previous outbreak centers. Defoliating insects, as a group, were the principal pests in the region. Although infestations of spruce budworm were static, intensity of tree defoliation increased in some areas. The larch casebearer, a relative newcomer in the northern Rockies, spread to additional areas. Although there was no aerial spraying for control of spruce budworm during the year, action programs were continued for control of Engelmann spruce beetles and 159,725 infested trees were salvaged.

In the central Rockies, losses increased and infestations of outbreak proportions occurred on over a million acres. The Engelmann spruce beetle continued as a problem in Colorado and Wyoming and new epidemics developed on portions of three national forests in Utah. The Black Hills beetle, mountain pine beetle, and Douglas-fir beetle increased in numbers and outbreaks were numerous and wide-spread. For the first time in several years, heavy defoliation of fir, spruce, and pine by spruce budworm occurred in Colorado and budworm infestations continued in Idaho. The Great Basin tent caterpillar was noted throughout southern Colorado and heavy defoliation of the aspen type is forecast again for 1959.

CONDITIONS IN THE SOUTHWEST

Insect activity decreased sharply in Arizona and New Mexico even though infestations of some species were more severe than in past years. Tree-killing caused by bark beetles was greatly reduced from levels of 1957 and defoliation of ponderosa pine by a needleminer almost disappeared. In contrast, damage to fir and spruce by spruce budworm increased; two additional areas were found infested by Douglas-fir tussock moth; and infestations of Douglas-fir beetle were more acute. Logging infested trees was continued as a measure for control of pine bark beetles, supplemented to the extent needed by spraying infested trees with toxic oils. The spruce budworm was brought under control by aerial spraying on 100,000 acres in Arizona and tent caterpillars were combatted by introducing virus organisms into outbreak centers or by aerial application of DDT sprays.

CONDITIONS IN THE LAKE STATES, CENTRAL STATES AND THE NORTHEAST

The scope and intensity of the more important forest insects in the Lake States, Central States and the Northeast was not greatly different in 1958 from conditions the previous year. The spruce budworm caused moderate to severe defoliation of balsam fir in Maine, Minnesota, Wisconsin and Michigan and aerial spraying was undertaken to suppress infestations on 313,861 acres. Populations of the jack-pine budworm were generally light throughout Michigan and Wisconsin and suppressive controls were not needed in any area. Other pest species such as the European pine shoot moth, Saratoga spittlebug, white-pine weevil, larch sawfly, pine sawflies, tent caterpillars, the gypsy moth, and others were not materially changed from conditions in 1957. In all cases where infestations were most severe, suppressive controls were initiated to protect the forest resource. Control was needed, for example, to suppress the Saratoga spittlebug, shoot moths, sawflies, weevils, tent caterpillars, and the gypsy moth. The latter control program, a cooperative undertaking between Agricultural Research Service and the States involved spraying on 510,000 acres.

CONDITIONS IN THE SOUTHERN AND SOUTHEASTERN STATES

The insect situation in the Southern States is much improved over conditions of a year ago but several pests continue as a constant threat to the timber stands. Early in the year, rapidly developing infestations of southern pine beetle seriously threatened stands of southern pines in the Big Thicket area of southeast Texas but all were effectively suppressed by public and private agencies by late summer. In the South and Southeast, tree-killing by the major bark beetles was less than has been the case for the past several years. However, action programs in control involved spraying or salvaging over 415,000 trees. The extreme low temperatures of 1957-58 killed most of the larval broods of the southern pine beetles in the Southeast and for unknown reasons, black turpentine beetle activity diminished almost entirely by mid-year. Other insects, however, occurred in outbreak status over large areas and are of considerable concern; sawfly infestations were epidemic in Virginia, North Carolina and in north-central Florida; and an outbreak of the elm spanworm spread over 570,000 acres in Georgia, Tennessee and North Carolina. The balsam woolly aphid, a new pest in the Southeast, threatens the fir resources on Mt. Mitchell and in other areas in North Carolina.

Suppressive controls were not undertaken for sawfly and spanworm infestations although methods for doing so were developed and will be put to use, if needed, during 1959. Missible oil sprays will be tried on a pilot basis for control of woolly aphid on high value trees in heavily-used recreational areas in North Carolina.

STATUS REPORT ON INSECT PESTS

MOUNTAIN PINE BEETLE, Dendroctonus monticolae Hopk. - The Mountain pine beetle, a serious pest of the more important species of pines in the Western States, occurred in outbreak proportions in many areas. Stands of lodgepole pine in the Rocky Mountains were most affected but outbreaks also were reported in other tree species in other Western States as well.

In the lodgepole pine forests of the Intermountain Region, infestations continued on an upward trend. Many epidemic areas have increased in size and some new centers of infestations developed. Currently, some 22 epidemic infestations occur in five national forests in Utah, south Idaho and western Wyoming, and others are known at Glacier and Grand Teton National Parks, and at other locations. The largest infestation reported, and one that poses a severe threat to large volumes of lodgepole pine, is on the Wasatch National Forest in Utah. In this area, more than 146,000 gross acres are infested and some 110,000 trees were attacked and killed during the year. In Oregon and Washington, infestations in lodgepole pine decreased whereas in California the beetle continued to be very destructive at Yosemite National Park and in one area in Modoc County. In the same tree species in western Wyoming, an epidemic on the Shoshone National Forest continued unabated and some 10,000 additional trees were attacked and killed on the Wind River District during the flight season.

Infestations in western white pine occurred on some 268,000 acres on the Gifford Pinchot, Snoqualmie and Mt. Baker National Forests in Washington and on the Willamette National Forest in Oregon. The trend of these infestations, however, fluctuated both up and down.

Few infestations of any consequence were reported in stands of sugar pine in the Pacific Coast states but outbreaks in second-growth ponderosa pine did occur in a few localities. At Crystal Bay, Nevada, the beetle remained epidemic and an increasing rate of loss in similar stands was reported in the Boise National Forest in Idaho.

The extent of mountain pine beetle infestations in all areas and in all host types in the Western States was such as to preclude initiation of suppressive control action in all areas. However, control was undertaken in outbreak areas in the lodgepole pine stands of Idaho, Utah, California and Wyoming and 71,900 trees were either sprayed with toxic oils or salvaged. In Nevada, the epidemic in second-growth ponderosa pine at Crystal Bay was brought under partial control by cooperative efforts of public and private agencies. In this area, 6,010 trees were either sprayed with toxic oils or logged.

ENGELMANN SPRUCE BEETLE, Dendroctonus engelmanni Hopk. - During the course of the past several years this major bark beetle has killed several billions of board feet of Engelmann spruce in the northern and southern

Rocky Mountains as well as in portions of the Pacific Northwest. It is noteworthy, therefore, that the rate of tree-killing in old outbreak centers is materially reduced. Although remnants of the epidemic in the northern Rockies still persists, infestations currently are confined largely to areas where spruce was preserved from logging in prior years. Most of the outbreaks now known in Montana and Idaho are confined to portions of the Flathead, Kootenai, Kaniksu, and Clearwater National Forests and, in the Beartooth Primative Area on the Custer National Forest.

New outbreaks of serious proportions were discovered early in the year on portions of three national forests in northeastern Utah. In these areas, populations developed to epidemic levels in windthrown trees in 1957 and some 150,000 standing trees were attacked and killed during 1958. In Colorado, beetle populations breeding in cull logs and windthrown trees along the edges of uncut strips of timber also attacked and killed some trees on the San Juan, Rio Grande and Gunnison National Forests and at a few other locations. Tree-killing in Oregon and Washington is at a reduced level and epidemic outbreaks were recorded on but 8,480 acres as compared to 32,000 acres in 1957. On the Wenatchee National Forest in Washington, 1,920 acres were infested. In Oregon, there were 3,040 acres infested, most of which was on the north half of the Umatilla National Forest. Broods in all trees in all areas were generally light and the trend of these infestations is downward.

Suppressive action for control of epidemic infestation centers was continued in Montana, North Idaho and southern Colorado. In Utah, a stepped-up control program was needed to confine the new epidemic in that area. In all, 251,500 trees were salvaged or sprayed with toxic oils.

DOUGLAS-FIR BEETLE, Dendroctonus pseudotsugae Hopk. - Outbreaks of Douglas-fir beetle showed up extensively in southwestern Oregon during the spring months and elsewhere in Oregon and Washington later in the year. The most extensive infestations were recorded in the South Umpqua drainage and adjacent stands on the Rogue River National Forest but considerable tree-killing also was recorded on the Siskiyou and Siuslaw National Forests. Smaller centers of aggressive infestation occurred on the Okanogan National Forest and Colville Indian Reservation in eastern Washington and the combined acreage of outbreak in both states totalled 931,480 acres. In Montana and north Idaho, activity by the beetle also increased, particularly in Swan Valley adjacent to the Flathead National Forest, and in the Fisher River drainage in the Kootenai National Forest. On the St. Joe and Nezperce Forests in Idaho, large groups of trees were killed and the outbreak at Yellowstone National Park continued. In Colorado and Wyoming, infestations were recorded on a total of 41,330 acres, a part of which contained outbreaks of severe proportions.

Although a decrease in area of infestations was reported from Arizona and New Mexico, the beetle population in those states still remains at a high level. In California, the insect continued in outbreak status in a portion of Siskiyou County where it has been epidemic since 1954. Elsewhere in the state, however, infestations were at a comparatively low level. Control of Douglas-fir beetle in all of the Western States was limited to the salvage of infested trees.

BLACK HILLS BEETLE, Dendroctonus ponderosae Hopk.- The Black Hills beetle, a major pest of ponderosa pine in the Rocky Mountains and the Black Hills of South Dakota, occurred in outbreak status in several areas during the year. In Wyoming, population increases as high as 4 to 1 were noted in the Big Horn Mountains and a similar ratio of increase occurred in portions of the Black Hills, and in Colorado. Total area of infestations in all areas was estimated at 77,290 acres. No new infestations were reported from Arizona and New Mexico and except for the long-standing outbreak on the Dixie National Forest in Utah, no other outbreaks of serious proportions are known elsewhere.

Direct control efforts against the Black Hills beetle involved spraying or salvaging 16,600 trees in portions of five states.

WESTERN PINE BEETLE, Dendroctonus brevicomis Lec. - Increased tree-killing by this important forest insect was general in the ponderosa pine forests of Oregon and Washington but was most evident on the Ochoco National Forest and the Warm Springs Indian Reservation in eastern Oregon. In Washington, infestations were most pronounced on the Okanogan National Forest and on the Yakima and Spokane Indian Reservations. Although all of these outbreaks still are in the light epidemic category, group tree-killing characterizing severe outbreaks is increasing. In California, infestations throughout most of the commercial timber zone were at low levels. Principal localities where the insect was noted in outbreak proportions were in Modoc County, Shasta County, and at Harris Mountain in Siskiyou County. Infestations in Coulter pine in Southern California also were more prevalent and more severe, but were below epidemic levels. In the northern Rockies, endemic loss conditions were the rule regionwide.

Although direct control action was undertaken to suppress outbreak populations of the western pine beetle in a few areas, the selective removal of high risk trees was intensified as an indirect measure for control. Salvage of infested trees also was used for control in many areas.

JEFFREY PINE BEETLE, Dendroctonus jeffreyi Hopk. - This tree-killing bark beetle, a pest only of Jeffrey pine in California, showed signs of increased activity during the year. Infestations of rather severe proportions were noted in the mature and overwinter pine stands in portions of Fresno County and at Lassen Volcanic National Park in Lassen County. In southern California, the insect was particularly damaging in some of the prized forest recreational areas and in large second-growth timber in the vicinity of Truckee, in

Placer County. The serious infestation reported in 1957 in the Cannel Meadows area in Tulare County is being brought under control by logging trees of high-risk to attack. Logging infested trees also was used for control in a few areas.

SOUTHERN PINE BEETLE, Dendroctonus frontalis Zimm.- The scope and severity of southern pine beetle infestations in the southern and southeastern states was much reduced in 1958 from the epidemic levels which have persisted for the past several years. The decrease in beetle activity in the Southeast is attributed largely to extreme low winter temperatures which killed a large percentage of larval broods in the infested trees. However, populations also were reduced by logging and spraying a large number of infested trees. In the South, decreased beetle activity also was brought about by the concerted efforts of public and private agencies to suppress populations by spraying and salvaging about 75,000 infested trees. New infestations of serious proportions were reported from Tyrrell and Hyde Counties, North Carolina, and from the Big Thicket area of Southeast Texas during the early spring months. However, the infestations in North Carolina subsided from unknown causes by year-end and the Texas outbreak was suppressed by treating 1,500 trees. No other infestations of damaging proportions are now known in the southern and southeastern states.

BLACK TURPENTINE BEETLE, Dendroctonus terebrans (Oliv.)- The black turpentine beetle continued to be a serious pest of pine in the southern and southeastern states. However, the scope and severity of losses caused by the beetle in 1958 were somewhat less than for the past several years. In the Southeast, for example, there were no serious infestations reported since early summer despite increased cuttings in several areas where the insect had been a major problem in prior years. A similar lessening of beetle activity occurred in the southern States but new build-ups of populations late in the fall months are a potential source of trouble in many areas in Mississippi and Alabama. In the latter areas, attacks were especially common where timber was cut at intervals of several months--first for poles and piling, next for sawtimber, and finally for pulpwood. When cutting was terminated, beetles emerging from stumps spread and attacked standing trees, killing them by force of numbers.

Despite the decrease in severity of infestations, suppressive controls by spraying infested stumps or the basal portion of standing trees were continued and a total of 320,000 stumps and trees were treated with toxic chemicals.

SOUTHWESTERN PINE BEETLE, Dendroctonus barberi Hopk.- The southwestern pine beetle, together with an association of Ips beetles and other Dendroctonus species, was reported to have killed large numbers of ponderosa pines on some 535,000 acres in Arizona and New Mexico. Tree-killing was most severe on portions of the Coconino National Forest and the Fort Apache

Indian Reservation in Arizona and on the Cibola National Forest in New Mexico. In Nevada, the infestation at Charleston Mountain continues at a high level despite continued efforts to suppress populations by direct means. In this latter area, 339 trees were treated in the control program.

ROUNDHEADED PINE BEETLE, Dendroctonus convexifrons Hopk. - The roundheaded pine beetle, often occurring in association with other bark beetles in beetle-killed ponderosa pine in the Southwest, was not reported as a problem in any area during 1958. A small outbreak on Mt. Graham, Coronado National Forest, Arizona was suppressed in August by treating 29 infested trees and no additional tree-killing of any consequence has been found since that time.

ALASKA SPRUCE BEETLE, Dendroctonus borealis Hopk. - Increased activity of the Alaska spruce beetle was reported in stands of white spruce at several places on the Kenai Peninsula in Alaska. Several large groups of dead and dying trees occurred along Resurrection Creek, Palmer Creek, Granite Creek, and Quartz Creek and tree-killing is expected to continue at a fairly high level in and adjacent to the infested areas during 1959. To date, no action has been undertaken for control.

SITKA SPRUCE BEETLE, Dendroctonus obesus Mann. - The recent outbreak of the Sitka spruce beetle in the vicinity of Blackstone Bay in southeast Alaska subsided completely during the year. No other infestations were reported, and populations of this major pest are believed to be at the lowest levels of the past several years.

LODGEPOLE PINE BEETLE, Dendroctonus murrayanae Hopk. - The lodgepole pine beetle was reported for the first time in several years from a number of drainages of the Gallatin National Forest in Montana. The beetle is not ordinarily a serious pest of lodgepole pine and beetle-attacked trees this year were reported as having been previously injured by porcupines pitch moths, or mountain pine beetles. No control was needed.

CALIFORNIA FLATHEADED BORER, Melanophila californica Van Dyke - The California flatheaded borer continued in epidemic status, alone or in association with one or more species of pine bark beetles in many places in California. Tree-killing by the borer in southern California was quite heavy, enough so as to prompt a stepped-up program in control by salvaging infested trees, logging high risk trees, and in some cases by spraying with toxic oils.

PINE ENGRAVER BEETLES, Ips spp. - Green slash created by logging, windstorms, right-of-way clearings, and in other ways often is responsible for outbreaks of pine engraver beetles in and adjacent to disturbed areas. Reports from many sections of the country about flare-ups of engraver beetle infestations made mention of their occurrence in association with fire-killed and wind-thrown timber and in areas disturbed by logging. In the South, three species of Ips beetles, I. avulsus Eichh., I. calligraphus Germ., and I. grandicollis Eichh., were reported from scattered locations in localized areas near burns and logging operations, and in overdense stands. In the Southeast, the beetles also occurred in localized areas adjacent to stands disturbed by logging. For the most part, attacked trees were scattered except in eastern and southeastern Georgia where group-killing occurred in areas as large as 1/2 acre.

In the coniferous forests of the western states, Ips beetles were generally at a low endemic level. Damage caused by I. oregonis Eichh. in Oregon and Washington was the least in many years and outbreaks were recorded from only 11,000 acres. In California, I. confusus Lec. caused only light damage until the fall months when activity increased along the coastal areas in the central portion of the state. Damage in New Mexico and Arizona by I. lecontei Sw. I. oregonis Eichh. and I. ponderosae Sw. was extensive and quite serious because one or more of the species usually made the initial attack in the top portion of pines which later were attacked and killed by other bark beetles. The extensive infestation of I. lecontei in the pinyon-juniper stands in New Mexico declined to an extremely low level due to high mortality of overwintering adults.

For the first time in several years, engraver beetles were abundant in nearly all of the Northeastern States. In all areas where Ips-killed trees were merchantable major efforts were made to salvage them. Except for salvage and preventive measures, no other efforts were made for control.

FIR ENGRAVER, Scolytus ventralis Lec. - There was little change in conditions of infestations of fir engraver beetles in Oregon and Washington and outbreak areas which totalled 22,000 acres, approximately the same as last year, were evenly divided between the two states. Similar conditions occurred in California and outbreaks for the state as a whole were quite localized and losses were moderate. Tree-killing in the fir resources of the central Rocky Mountains, however, were severe in some areas and infestations on some 98,000 acres, mixed with Dryocoetes confusus Sw. occurred on portions of the Grand Mesa, Uncompahgre, Rio Grande, San Juan, White River, Medicine Bow and Arapaho National Forests. In New Mexico, a new infestation of severe proportions on 4,480 acres was discovered on the Lincoln National Forest and the rate of tree-killing in the fir stands on the Sandia Mountains continued at high levels. In this latter area, infestations are reported to have spread to an additional 2,000 acres. D. confusus decreased sharply in northern New Mexico and tree-killing, now at moderate rates, is confined to portions of the Carson and Santa Fe National Forests.

DOUGLAS-FIR ENGRAVER, Scolytus unispinosus Lec. - For the first time in many years this insect was reported in outbreak status in parts of California. In cutover lands in Humboldt and Mendoceno Counties, numerous groups of young Douglas-firs were heavily infested and other infestations occurred in scattered locations southward.

SILVER FIR BEETLES, *Pseudohylesinus* spp.- During the past several years, one or more species of fir engraver beetles have caused severe tree-killing in fir stands in portions of Oregon and Washington. During 1957, infestations dropped to near endemic levels. In 1958, however, populations increased and tree-killing was noted on some 5,000 acres as compared to only 1,120 acres infested last year. The severity of infestations currently is much less than was experienced in the recent epidemics, but broods currently were reported as aggressive and the trend of loss appears to be upward. Major efforts by public and private agencies were continued during the year to salvage dead and dying trees.

PINE WEEVILS, *Hylobius*, *Pachylobius*, *Pissodes*, and *Cylindrocoptorus* spp. Several species of pine reproduction weevils were reported to be particularly destructive to pine seedlings and reproduction in many sections of the country. At times, a single weevil species was responsible for damage or tree-killing; at other times, two or more species were found in the infestation areas. *Hylobius* and *Pachylobius* spp. occurred in concentrated numbers in slash pine planting areas in parts of Florida and the same insects were reported to be quite common in other states in the South and Southeast where pine plantings were made in areas recently logged. *P. approximatus* Hopk. was reported to be increasing in numbers and causing considerable damage in various sections of Ohio and in adjacent states where cutting in pine plantations has been heavy for Christmas trees. *H. radicis* Buch. was noticeably heavier in red pine and jack pine plantations in northwestern Wisconsin, in western Michigan, and at scattered locations in Minnesota. In all areas, this weevil was most severe in sandy soils. *Pissodes strobi* (Peck) also was noticeably heavier during 1958 in St. Lawrence County New York and in northwestern Wisconsin and Lower Michigan. In the Lake States, as much as 15-20 percent of the red pine and over 40 percent of the jack pine in plantations were found to be weeviled. In California, *Cylindrocoptorus eatoni* Buch. caused severe killing of sapling-sized ponderosa pines on a portion of the Stanislaus National Forest but the pest was not reported from other areas in the state where infestations have been severe in past years.

Control of pine reproduction weevils in the southern and southeastern States is being accomplished by delaying the planting of trees for about 9 months after areas are logged. Dipping seedlings in insecticidal solutions also is proving satisfactory for control. Aerial application of DDT was used for control of *Cylindrocoptorus* in California and lead arsenate and lindane was applied by ground methods for control of *P. strobi* in Pennsylvania, Michigan and New York.

SPRUCE BUDWORM, *Choristoneura fumiferana* (Clem.) - The spruce budworm, a major pest of mixed conifer forests in all sections of the country, continued in epidemic status in susceptible host type in many areas from coast to coast. The most extensive infestations occurred in the northern Rocky Mountains where nearly six million acres have been defoliated to one degree or another since the budworm epidemic developed there in the late 1940's. The rate of increase of new infestations in this region during the past two years has been less than heretofore and extension of the older outbreaks in 1958 was not great. However, total area of active infestations in Montana and north Idaho now occur on 3,521,700 gross acres. Control of these infestations was not attempted during 1958.

Budworm infestations in the Lake States also are extensive and defoliation during 1958 increased over prior years. Although some 1,300,000 acres of balsam fir forests in Michigan, Wisconsin and Minnesota are infested, defoliation in most areas was not severe. However, to avert tree mortality in severely defoliated areas aerial spraying was undertaken and 12,000 acres were treated in northern Minnesota.

Increasing infestations over relatively large areas also were reported from portions of southern Colorado and from northern New Mexico. In Colorado, defoliation was noted on more than 172,000 acres and in New Mexico on some 200,000 acres. In these two states, tree defoliation in some portions of the infested areas was severe and fear is expressed that the host type will be threatened if the trend of populations continues to rise. There are no plans currently, however, for initiation of control.

In Maine, outbreak populations occurred on nearly three million acres but aerial spraying on 302,000 acres in that state reduced most infestations to endemic levels. However, subsequent to the aerial spraying program, an appreciable egg population was found along the western and southern edges of the sprayed area and heavy infestations occur therein for the first time in many years.

In eastern Oregon, budworm populations were particularly severe on a large acreage but aerial spraying on 818,000 acres reduced those infestations to the lowest levels since 1947. Although some 315,000 acres remain infested, the population trend is downward and need for additional controls is not anticipated in the near future.

Although spruce budworm infestations in California are restricted to the northeastern corner of the state, the severity of defoliation during the year increased and infestations spread southward.

BLACKHEADED BUDWORM, Acleris variana (Fern.)- The black-headed budworm is a periodic pest of western hemlock and sitka spruce in coastal Alaska and in the hemlock alpine fir stands in the northern tier of western states. After a lapse of two years, the insect again was found in the hemlock stands of southeast Alaska and although light and moderate defoliation during the year was restricted to the vicinity of Ketchikan, increased budworm activity there and elsewhere in southeast Alaska is expected during 1959. The widespread infestations reported on the Kootenai National Forest in Idaho in 1957 subsided and now occurs on only 1,500 acres in that area. The outbreak on some 253,000 acres in western Washington during 1957 also declined to 2,720 acres and complete collapse of this infestation is expected during the current year. A small sub-epidemic infestation on sub-alpine fir along the Tollgate-Troy ridge in eastern Oregon flared up during the summer months but was quelled by high larval parasitism during the fall months. In Idaho, an infestation on some 50,000 acres of alpine fir is restricted to high altitude ridge tops. There was no need in any infestation area for direct action in control.

JACK-PINE BUDWORM, Choristoneura pinus Free. - Populations of this major pest of jack-pine in the Lake States were much reduced from levels occurring there during the past several years. However, an extensive area of host type on a portion of the Indian Sioux Roadless area in northern Minnesota was defoliated during 1958 and a moderate infestation occurred on the lower Penninsula of Michigan. It is of interest that extremely light populations were reported in northwestern Wisconsin where epidemic infestations were present during 1956 and 1957. No direct action was needed in any area for control.

LARCH AND SPRUCE BUDMOTHS, Zeiraphera spp. - Two species of budmoths have been in epidemic status in portions of Oregon and Washington for the past several years. The larch budmoth, Z.griseana (Hbn.) in western larch stands on the Snoqualmie and Wenatchee National Forests in Washington increased during the year but populations attacking Douglas-fir and white fir in both eastern and western Oregon continued light and caused no appreciable damage. Z.ratzeburgiana Sax. which has been in outbreak status in stands of sitka spruce along the coastal areas of Oregon and Washington declined to a few small spots and damage from the defoliation was slight.

DOUGLAS-FIR TUSSOCK MOTH, Hemerocampa pseudotsugata McD. - Five separate outbreaks of Douglas-fir tussock moth were reported from New Mexico, Arizona and Idaho. One outbreak, first discovered on 125 acres on Pinal Mountain, Tonto National Forest, Arizona in 1957, now occurs on 2,500 acres. Another outbreak, first discovered in 1958 on Mt. Baker on the same national forest, is 3,000 acres in size. In New Mexico, some 300 air miles distant from the outbreaks in Arizona, the moth was found in outbreak status at two separate locations. One is on the Lincoln National Forest in the southern part of the state; the other is in the Sandia Mountains east of Albuquerque. Defoliation of white fir in the outbreak areas has been severe and tree mortality is expected in lieu of suppressive controls.

The 10,000 acre tussock moth outbreak reported from Owyhee County in southern Idaho was practically eliminated during the year by a virus disease affecting the larval population. This is the second time in 10 years that outbreaks of tussock moths have been brought under control by a virus disease in this area. A closely related tussock moth, species unknown, was discovered in epidemic numbers on range plants in the foothills between Carson City and Reno, Nevada.

NEW MEXICO FIR LOOPER, Galenara consimilis Hein. - An infestation of New Mexico fir looper, endemic in New Mexico since 1952, was discovered on some 1,500 acres in the Capitan Mountains during the late fall months. The looper population currently is being held in check by a fungus disease and some 50 percent of the pupae collected from the soil in December were infected. The Douglas-fir tussock moth also occurs in outbreak status in the looper infestation area and combined feeding by both insects has been such that tree mortality is imminent on some 600 acres.

PINE BUTTERFLY, Neophasia menapia (Feld.) - The pine butterfly, a periodic pest of ponderosa pine in the western states, was found on some 50,000 acres on the Salmon National Forest in Idaho during the summer months. Damage to host trees was not great but egg deposition in the entire area is sufficient to cause concern that a new epidemic may be in the making.

PINE NEEDLEMINERS, Recurvaria and Argyresthia spp. - Damaging infestations of pine needleminers were reported at several locations during the year. The epidemic of Recurvaria milleri Busk. which has persisted for the past several years at Toulumne Meadows, Yosemite National Park, California continued unabated in the lodgepole pine forests at that location and spread to additional areas as well. The pest was found at a new location on the Stanislaus National Forest and was reported as being abundant there, on a portion of the Inyo National Forest, and at Sequoia-Kings Canyon National Park. In addition, this species also occurred in outbreak numbers in a large area on a portion of the Sawtooth National Forest in Idaho and on 1,500 acres in the Targhee National Forest in the same state. In these latter areas, defoliation has not resulted in tree-killing. At Yosemite National Park, however, defoliation is now causing mortality of trees and in lieu of suppressive controls, the entire stand of lodgepole pine currently affected is expected to be killed. Insecticidal formulations dispersed by aircraft and helicopter are being tested for control at Yosemite in hopes of saving the lodgepole pine in the most heavily used recreational areas.

Another Recurvaria sp. which occurred in outbreak status in the Southwest during 1956 and 1957 disappeared during 1958. In contrast, two new outbreaks of this unknown species occurred in Colorado; one was reported from the vicinity of Durango and the other from an area southwest of Colorado Springs. Damage to trees in both areas, however, was not great.

During the early spring months, an outbreak of a needleminer of the genus Argyresthia caused extensive discoloration of foliage of ponderosa pine on the Warner District of the Freemont National Forest in southeastern Oregon and there was fear that the attacked trees might be killed or so weakened as to be particularly susceptible to bark beetles. However, the mined needles dropped during the fall months leaving the trees in apparently healthy condition. Furthermore, at the time of pupation, the needleminer suffered considerable mortality from unknown causes and the infestation is not now a threat to the pine stand in this area.

PANDORA MOTH, Coloradia pandora Blake - A light infestation of the pandora moth on ponderosa pine was reported from along the McKenzie Highway on the Deschutes National Forest in eastern Oregon. Feeding of the new brood occurred during September and October but the heavy feeding will occur in 1959 when the caterpillars mature. It is of interest that this new infestation occurs in the same general area where an outbreak of the same species appeared 25 years ago. The former outbreak subsided from natural causes without causing appreciable damage to the resource attacked.

SPEAR-MARKED BLACK MOTH, Eulype hastata L. - Stands of paper birch over relatively large areas in the vicinity of Fairbanks, Alaska were severely defoliated by the spear-marked black moth during the summer months of 1957. This insect pest, undetermined at that time, and not previously known to occur in Alaska, increased in numbers during the year and spread to a gross area of 5,829,000 acres. Heavy defoliation occurred on 333,000 acres but a sharp decline in the population, caused by a granulosis virus and insect parasitism, was noted in mid-season. The infestation is expected to decrease further in 1959. Direct action for control was not needed.

TENT CATERPILLARS, Malacosoma spp. - Tent caterpillar infestations were reported from various sections of the country and heavy populations in some areas caused severe defoliation of host trees. In the western states, M. fragilis Stretch was particularly prevalent. Aspen stands in Colorado, for example, were completely defoliated on 130,000 acres and cumulative damage for as much as 9 years is causing severe mortality of trees on 1,180 acres. Infestations also were abundant in Utah, Idaho, New Mexico, Montana and Arizona. One of the more serious of these infestations was on the Cache National Forest in Utah, where chokecherry and several brouse plants were completely stripped. The trend of infestations in Arizona and New Mexico was downward and acreage of defoliation in those states was somewhat less than in prior years.

The forest tent caterpillar, M. disstria Hbn. was reported to be quite prevalent in many areas in Montana and North Idaho and for the first time in 4 years, infestations appear to be increasing in those areas. The same species also increased in numbers in the Lake States and along the East Coast and infestations were particularly severe in Pennsylvania, West Virginia, Wisconsin and Minnesota. In the latter state, defoliation of aspen occurred on 185,000 acres and lesser amounts of feeding on an additional 625,000 acres.

The severity of tree defoliation in heavily used recreational areas in Colorado, Utah, New Mexico and Arizona prompted land-managing agencies to initiate suppressive controls. Although most areas needing control action were of small size, a total of 6,100 acres were treated during the year.

PINE SAWFLIES, Diprion and Neodiprion spp. - Several species of pine sawflies were reported in outbreak status from many sections of the country. In some places, defoliation was severe over large areas; in others, trees on smaller areas were defoliated to a lighter degree. N.pratti pratti (Dyar) occurred sporadically on Virginia pine in a broad zone from northern Virginia south to North Carolina, a gross area of approximately 2,750,000 acres. In Florida, some 300,000 acres of loblolly pine in five counties were partially defoliated by species identified as N. excitans Roh., N.lecontei (Fitch), N. abbottii (Leach), and N. compar (Leach). N. excitans Roh. also was identified as the species causing defoliation of scattered areas of loblolly pine in southeast Texas and N. lecontei defoliated young plantations of all southern pine species at various places in the southern states. N. taedae linearis Ross was reported from southern Arkansas and northern Louisiana but defoliation was usually light. In Missouri, the widescale infestation of the latter species in 1957 failed to reappear altogether.

Several other sawflies caused noticeable damage to natural and planted pines in the northeastern states. A species attacking pitch and short leaf pine, believed to be N. pratti paradoxicus Ross occurred on over 1,630 square miles in south-central New Jersey; N. sertifer (Geoff.) was abundant locally in portions of New York, Connecticut, New Jersey and Pennsylvania and, N. lecontei increased in such numbers in New York that applied control may be needed to prevent tree-killing on large acreages in 1959. In the Lake States, infestations of N. lecontei were reported as severe in portions of Michigan and Wisconsin and control is forecast for 1959. Other species, such as N. sertifer, N. pratti banksianea Roh. and D. similis (Htg.) all occurred in portions of Minnesota, Wisconsin and Michigan. N. pinetum (Nort.) was reported to have caused complete defoliation of white pine in some places in Ohio but heavy infestations did not cover large acreages. N. fulviceps complex was noted defoliating ponderosa pine in the vicinity of Grants, New Mexico but no tree mortality occurred in the affected area. An unidentified Neodiprion species defoliated lodgepole pine on two islands in Granby Reservoir, Colorado and a small spot infestation on the same tree species was reported on the Willamette National Forest in central Oregon. This latter species has occurred over extensive areas in Oregon in prior years, last reported on some 70,000 acres in 1953.

BALSAM WOOLLY APHID, Chermes piceae (Ratz.)- The balsam woolly aphid was first discovered in the Pacific Northwest in 1954. Since then, the extent and severity of infestations increased rapidly in each succeeding year. In 1958, however, intensity of damage in both Oregon and in Washington decreased. Nevertheless, very aggressive bole infestations were prevalent in the subalpine fir stands in the Cascade Range late in the season, indicating that the epidemic may increase in severity in these stands during 1959. In Pacific silver fir, the heaviest centers of damage are in the Green, Toutle and Kalama River drainages on the Gifford Pinchot National Forest in Washington. However, considerable improvement of damaged trees was noted in the Lewis River drainage. The insect was discovered in Mt. Ranier National Park for the first time and this marks the northernmost point the insect has been found in Washington.

Damage by the aphid in the northeastern states also is assuming truly serious proportions and tree mortality is occurring throughout most of Vermont and in the White Mountain National Forest in New Hampshire. In Maine, an apparent increase in populations resulted in more gout-injury to trees along the coast and on the Penobscot Experimental Forest near Bangor. In the latter area, stem attacks also are more severe and tree-mortality appears imminent.

In the Southeast, this aphid, previously thought to be C. nusslini Bor. was responsible for the killing of thousands of Fraser firs on Mt. Mitchell, North Carolina and infestations now are known in Virginia as well. Estimates from surveys indicate that some 25 percent of the fir resources on Mt. Mitchell are now dead and that 90 percent of the remaining trees are threatened.

In lieu of suitable measures to combat aphid infestations by direct means, major efforts were made during the year to introduce predators from Europe and Japan for biological control. The severity of tree-killing by the aphid in all areas of infestations has prompted a stepped-up program by landowners and land-managers to salvage dead and dying trees.

EUROPEAN PINE SHOOT MOTH, Rhyacionia buoliana (Schiff.) - The severity and extent of European pine shoot moth infestations during 1958 continued at about the same levels and in the same parts of the country as in the past several years. The moth was present throughout Ohio wherever red pines occurred in plantations and infestations ranging from light to heavy also were reported from many parts of Indiana. Populations were particularly high in Carbon County, Pennsylvania and in portions of West Virginia, New York, southern Connecticut, and in Lower Michigan, parts of Wisconsin, and in Minnesota.

Other Rhyacionia moths also occurred at about the same level of intensity and in the same parts of the country as reported in prior years. R. frustrana (Comst.) and R. rigidana (Fern.) caused severe damage to shortleaf pine plantations at several locations on the Brownstown Ranger District, Hoosier National Forest, Indiana; in "The Pounds" area on the Shawnee National Forest in the same state; and in eastern Maryland. Moderate to severe infestations were reported throughout Ohio, in Delaware, in most of the southern states, and all of the southeastern states. An undetermined species was reported as causing considerable damage to ponderosa pine reproduction on the Custer National Forest in Montana.

An expanded program of research on biology, ecology and control of shoot moths lead to the development of more suitable methods to suppress infestations in plantations and pilot control tests on some 500 acres of red pine plantations were conducted in southern Michigan and in Pennsylvania. Preliminary results of these tests indicate satisfactory control.

GYPSY MOTH, *Porthetria dispar* (L) - The gypsy moth was generally at a lower level in the northeastern states during the year and in the newer infestation area in Michigan as well. Aerial spraying programs by the states and the Federal government were needed, however, to suppress populations in Pennsylvania, New York, Connecticut, Massachusetts, and Maine. No spraying was undertaken in Michigan. Total area sprayed in all states amounted to 510,000 acres.

ELM SPANWORM, *Ennomos subsignarius* (Hbn.) - Defoliation of hardwoods by the elm spanworm in the mountains of Georgia, Tennessee, and North Carolina occurred on a much larger acreage in 1958 than was reported in 1957. Currently, infestations are known to occur on more than a million acres of which a half million acres were severely defoliated. A pilot test was undertaken during the year to determine timing and dosages of DDT sprays needed for control of this pest species. If natural factors fail to bring this infestation under control, aerial application of DDT sprays may be needed to protect the resource affected.

SPITTLEBUGS, *Aphrophora* spp. - Red pine plantations in portions of Michigan, Wisconsin and Minnesota often are seriously damaged by Saratoga spittlebug, *A. saratogensis* (Fitch) when this insect pest is abundant, and suppressive measures for control usually are required to protect planted trees until they grow beyond susceptible size. Although populations of the spittlebug were quite heavy in Wisconsin and Minnesota early in the year, late spring frosts materially reduced nymphal populations and control was found to be unnecessary in many areas. In Michigan, damage within infested stands was spotty but most conspicuous in the northern Lower Peninsula. Suppressive controls were undertaken on some 4,500 acres of public and private plantations in the three states.

The pine spittlebug, *A. parallela* (Say) was reported to have occurred in moderate numbers in stands of white pine on the Mohican State forest in Trumbull County, Ohio but damage to host trees was not severe and control was not necessary. The latter species, or a closely related one, also was reported more common in 1958 than usual on pitch and shortleaf pines in southern New Jersey and on loblolly pine on the upper Eastern Shore of Maryland and in Delaware.

LARCH SAWFLY, Pristiphora erichsonii (Htg.) - The larch sawfly continues as a major pest of stands of tamarack in the Lake States and extent of infestations in 1958 were greater than in prior years. The intensity of infestations increased in portions of Wisconsin and Minnesota where reports were received that tree-killing occurred in many areas. In Michigan, all of the larch stands in the Upper Peninsula suffered at least 20 percent defoliation and some stands were more than 60 percent defoliated. It is noteworthy that an infestation affecting western larch, discovered in Missoula County, Montana, was the first record of the insect in the northern Rocky Mountains since 1944.

SPRUCE MITE, Oligonychus ununguis (Jac.) - Infestations of the spruce spider mite which erupted to epidemic proportions in stands of Douglas-fir in Idaho and Montana during 1957 were reported to be persisting on several of the national forests east of the Continental Divide in Montana. The mite populations, found to be heaviest in areas sprayed with DDT for control of spruce budworm in prior years were reported on the wane, however, and tree-killing as a result of infestations did not occur.

SPRUCE MEALYBUG, Puto sp. - The infestation of spruce mealybug in stands of Engelmann spruce in southern Utah was reported as very active in 1958. Although the area of infestation has not increased beyond the 60,000 acres infested in prior years, continued heavy feeding is rapidly reducing vigor of the mature trees and is causing some deformity in the younger trees. Another mealybug, unidentified as to genus, was reported from southern Utah. This species, attacking true firs, white bark pine, spruce and lodgepole pine, occurs on an area of some 6,000 acres. There was little or no damage to affected trees. No control was attempted in either infested area.

PINE NEEDLE SCALE, Phenacaspis pinifoliae Fitch. - Infestations of pine needle scale often are reported from place to place in the pine stands of the western states. During 1958, one outbreak on ponderosa pine was reported to have spread and became more conspicuous around orchards in the vicinity of Wenatchee, Washington. These infestations have been observed for the past several years and are attributed to the effects of spray drift from the orchards. Another outbreak center on 10,400 acres was recorded on the Colville Indian Reservation in Washington. Cause of this latter outbreak was not reported.

LARCH CASEBEARER, Coleophora laricella (Hbn.) - An outbreak of the larch casebearer, first discovered in 1957 on some 15,000 acres in the vicinity of St. Maries, Idaho, was a new locality record for this forest pest. Surveys during 1958 revealed that the insect is present on some 110 square miles in northern Idaho and northeastern Washington. Although no visible defoliation was observed outside the 15,000 acre area reported in 1957, the insect was found in small numbers north to Sandpoint, Idaho and Chewelah, Washington. The southern edge of the infestation is believed to be in the vicinity of Clarkia, Idaho.

PINE LEAF APHID, *Pineus pinifoliae* Fitch - The pine leaf aphid which was particularly abundant in the northeastern states during 1957 was much reduced in 1958. However, the areas where infestations have persisted for as long as five years affected trees are being killed. Lower levels of infestations also were reported from the Lake States where the insect was quite prevalent in past years. Another aphid, tentatively identified as *P. coloradensis* Gill was reported from extensive areas in Montana and North Idaho and although affected trees were not killed, there was a serious loss of 2 and 3-year old needles which caused deterioration of crowns of attacked trees. The pine bark aphid, *P. strobi* (Htg.) was reported as abundant on white pine in nearly all of the Northeastern States and particularly abundant in the vicinity of Parsons, West Virginia, in portions of Maine, and in New York.

FALL WEBWORM, *Hyphantria cunea* Drury. - The fall webworm was reported from many areas throughout the country but infestations in most places were not viewed with particular alarm. Trees and shrubs in a rather large area west of Ft. Collins, Colorado and south to Colorado Springs were severely defoliated during the year and cumulative effects of defoliation is depleting shade trees and esthetic values in those areas. The webworm also was common in the southern part of the Lower Peninsula of Michigan where it caused complete defoliation of ash in affected areas. Wherever infestations occurred in areas heavily used by recreationalists, populations were suppressed by direct means.

THE LARGE ASPEN TORTRIX, *Archips conflictana* Wlkr. - The large aspen tortrix was reported to have caused light to moderate defoliation on 220,450 acres of aspen on the Grand Mesa, Uncompahgre, Gunnison, and San Juan National Forests in Colorado, and throughout most of the Upper Peninsula of Michigan. Tree-killing was not reported in any area where defoliation was extremely heavy, and no measures were undertaken for control. An unidentified leaf-roller, also on aspen, was reported on 1,300 acres in northern New Mexico.

The fruit tree leaf-roller, *A. argyrospila* (Wlkr.) which occurred in epidemic numbers in the Lower Peninsula of Michigan in 1957 was drastically reduced by parasites and late spring frosts.

ORANGE-STRIPED OAK WORM, *Anisota senatoria* A & S. - Reports were received that severe defoliation in a wide area in the Connecticut River Valley and in Rhode Island was caused by the orange-striped oakworm, and that the pest was unusually abundant in southern New Jersey, Maryland and in Pennsylvania. In the vicinity of Tamworth, New Hampshire, *A rubicunda* was reported to have caused heavy defoliation of sugar and red maple. In Lower Michigan, the red-humped oakworm, *Symmerista albiscosta* (Hbn.) defoliated some 21,000 acres of oak woodland. No control was needed for infestations in any areas.

ASPEN LEAF MINER, Phyllocnistis populiella Chamb. - The aspen leaf miner has been in epidemic status for some 10 years on four national forests in western Wyoming and southwestern Idaho. The infestations were reported active again in 1958 and nearly all of the aspen foliage in affected areas has been heavily mined. On the Teton National Forest, much of the foliage on affected trees has been stunted and some patches of aspen up to ten acres in size have been killed. Thus far, there has been no effort made to suppress populations by direct means.

INSECT PESTS OF SEEDS AND CONES OF CONIFERS. - The status of insects affecting the seeds and cones of coniferous trees is not known in detail except where special surveys are undertaken to determine their abundance and destructiveness. In California, such surveys were undertaken, and cone moths, seed chalcids and midges were reported as causing serious damage to the 1958 seed crop from Jeffrey, ponderosa and sugar pine, and Douglas-fir. Cone moths were identified as belonging to the genera Barbara, Dioryctria, Laspeyresia, and Hedula; the seed chalcid as Megastigmus spermotrophus Wachtl.; the midges as Contarinia sp., and the cone beetles as Conophthorus spp. Seeds and cones in some areas examined were less seriously affected than others, but generally, damage was so great that seeds could be collected profitably only in a few areas. Public and private agencies are exploring suitable methods for control of cone and seed insects, particularly in areas set aside as seed orchards.

C. resinosae Hopk. was reported to be abundant in portions of Michigan where new growth on red pine poles and larger trees was damaged. In this area, the cone beetle attacked new shoots of trees only because the 1958 cone crop was scarce.

TULIPTREE SCALE, Toumeyella liriodendri (Gmel.) - Heavy infestations of tuliptree scale were reported in localized areas in southern Kentucky, throughout Ohio, and in southern Illinois. In these latter areas, young reproduction as well as merchantable-sized trees were severely damaged.

WALNUT CATERPILLAR, Datana integerrima G.&R. - The walnut caterpillars caused moderate to complete defoliation of black walnut in southern Ohio, northern Kentucky, and at a few places in other of the Central States. The insect also occurred in outbreak numbers at Carlsbad Caverns National Park in southeastern New Mexico but excessive damage to affected trees was averted by mist-blower application of DDT sprays. D.ministra (Drury) caused noticeable damage in New Castle County, Delaware and the insect appears to be generally present in the complex of hardwood defoliators from Massachusetts southward to Maryland.

MIMOSA WEBWORM, Homadaula albizziae Clarke - Heavy infestations of mimosa webworm were reported from the vicinity of Indianapolis and Dayton, Ohio and lighter infestations occurred generally over the western portion of Ohio, in central Indiana, and in western Kentucky. Although the insect occurs in other states in the eastern half of the country, no reports were received of outbreak infestations in any of these areas.

BAGWORM, Thyridopteryx ephermeraeformis (Haw.) - Bagworms defoliating and killing white pines were reported from Delaware County, Ohio where trees were infested with 200 to 300 bagworms per foot of tree-height. In Delaware, Maryland and New York, populations also were abundant and injurious to red cedar and arborvitae.

SADDLED PROMINENT Heterocampa guttivitta (Wlkr.) - At periodic intervals the saddled prominent is a serious pest of birch in the eastern states. In 1956 a large-scale outbreak was reported in portions of several of the northeastern states but by 1957, all infestations had collapsed from natural causes. In 1958, a new infestation was reported on the southwestern slopes of Bald Mountain in New Hampshire. Extent of this infestation is not known.

MAPLE LEAF CUTTER, Paraclemensia acerifoliella (Fitch) - The maple leaf cutter defoliated several thousand acres of maple in Lewis County, New York and infestations in local areas were reported from most of Vermont. Generally speaking, infestations of this insect seldom require suppressive measures for control and none were undertaken in 1958.

VARIABLE OAK LEAF CATERPILLAR, Heterocampa manteo (Dbldy.) - The variable oak leaf caterpillar was very abundant in several sections of Delaware and Maryland. In the latter state, infestations were reported to be concentrated in Cecil County with most severe defoliation in the vicinity of Port Deposit and Principio Furnace.

RED-PINE SCALE, Matsucoccus resinosae B&G. - No change was reported in the status of red-pine scale infestations in the generally infested area in the vicinity of Bridgeport, Connecticut. Low winter temperatures may have killed portions of the brood of this pest thus resulting in a lessening of tree-killing from the level sustained in past years.

TEXAS LEAF-CUTTING ANT, Atta texana Buckley. - Damage to planted seedlings by the Texas leaf-cutting ant was reported from several areas in East Texas and in Louisiana. Although the ants are not usually destructive to forest trees, they often become pests of pine seedlings and reproduction during the winter months when other green plants are unavailable. The ants appear to have become more abundant in recent years, presumably because of drier soil in drought areas.

Washington 25, D. C.
April 22, 1959

STATUS OF SOME IMPORTANT INSECTS IN THE UNITED STATES

ASIATIC GARDEN BEETLE (*Autoserica castanea* (Arrow))

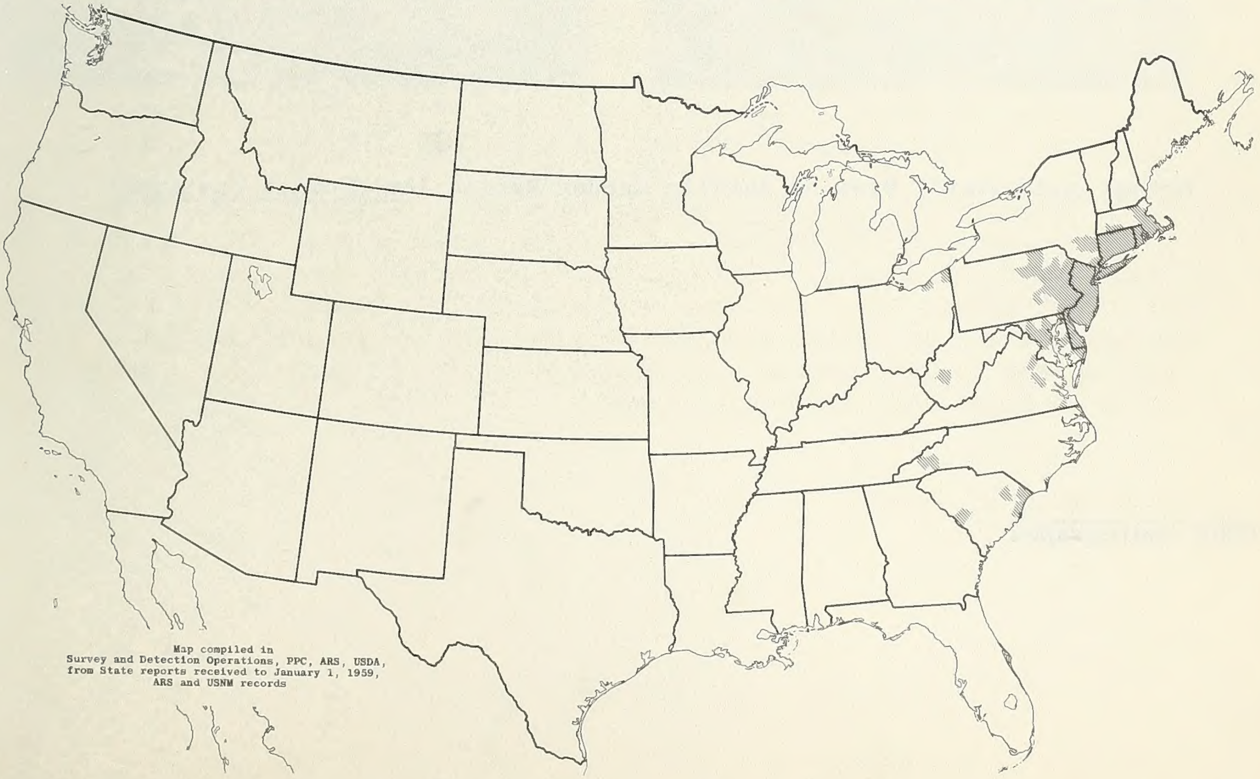
Economic Importance: Asiatic garden beetle is native to the Orient and was first found in the United States at Rutherford, New Jersey, in 1921. Though this species is not very destructive in Japan and China, it has found climatic conditions in the United States favorable for its multiplication and many plant hosts preferable for food. The adults can cause serious injury to foliage of host plants in a single night's feeding. Moderate feeding causes ragging of foliage while heavy attacks lead to complete destruction. Asiatic garden beetle is a considerable nuisance on warm summer evenings, flying about in brightly lighted places in large numbers.

Distribution: Occurs in China, Japan and the eastern United States (see map).

Hosts: About 80 plants are attacked, some of which are beet, carrot, eggplant, parsnip, pepper, turnip,aster, chrysanthemum, dahlia, strawflower and sunflower.

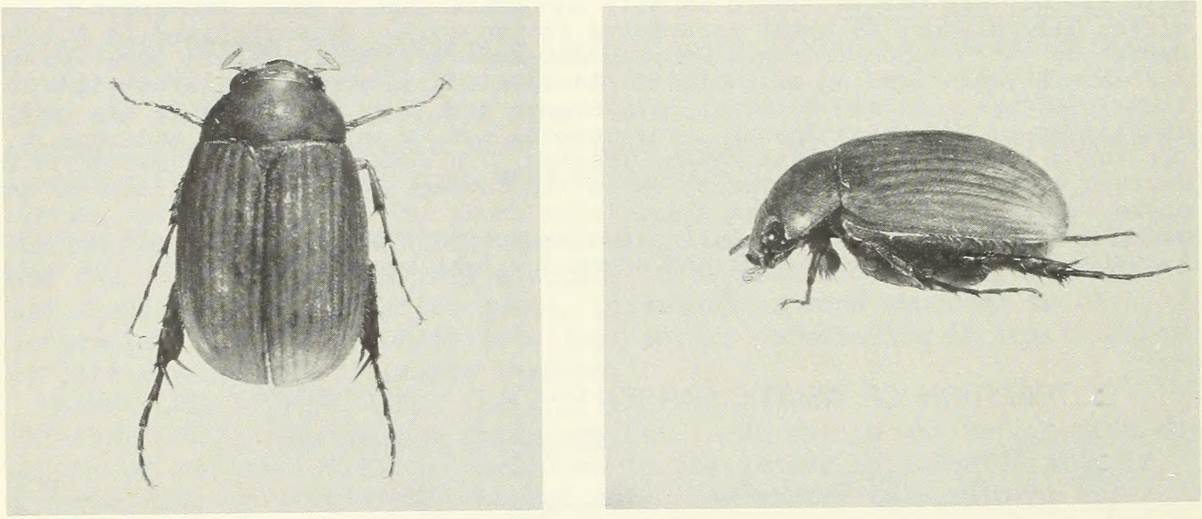
Life History and Habits: There is only one generation a year; the greater portion of the life history is spent as a larva in the soil. Eggs are laid in the soil at depths up to 4 inches from mid-July to mid-August. They hatch in about 10 days and larvae begin feeding on roots of plants and organic matter. There are 3 larval instars. In mid-October, larvae move down 6 to 12 inches in the soil and overwinter in the third instar. They become active in mid-April and move up to the top 5 inches of soil and resume feeding. In June, mature larvae construct an earthen cell about $1\frac{1}{2}$ to 4 inches below the surface, spend about 4 days as prepupae, then pupate. The pupal stage lasts about 10 days, after which adults emerge and burrow out of the soil. Adults are most abundant between July 15 and August 15. They are nocturnal and spend daylight hours concealed in the soil.

DISTRIBUTION OF ASIATIC GARDEN BEETLE *(AUTOSERICA CASTANEA)*



Map compiled in
Survey and Detection Operations, PPC, ARS, USDA,
from State reports received to January 1, 1959,
ARS and USNM records

Description: EGG - White, ovoid and about 1.0 mm. in diameter. LARVA - Newly hatched larvae are about 1.34 mm. long and when fully grown about 19.5 mm. long. They have a distinct head, 3 pairs of legs and are similar in appearance to larvae of May beetles, *Phyllophaga* spp., except being smaller and lighter colored. A single transverse row of spines on the underside of the last abdominal segment and a smaller claw on the third leg distinguishes *A. castanea* from most larvae that resemble this species. *A. castanea* can also be distinguished by the light-colored, enlarged, bulbous palpi. PUPA - About 8.3 mm. long and resembles adult. ADULT - From 8 to 11 mm. long, dull, chestnut brown. A few erect, irregularly arranged, backward-projecting hairs on the top of the head are characteristic of this species. (Prepared in cooperation with other ARS agencies and the U. S. National Museum). CEIR 9(21): 5-22-59.



Dorsal and Lateral View of Asiatic Garden Beetle (*Autoserica castanea*)

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